
EXHIBIT G

Claim 1	
A Web-based management engine for a network entity, comprising:	<p>Ruckus systems, for example, the SmartZone300, SmartZone100 and/or the SmartZone300 or SmartZone100 in conjunction with Ruckus access points, routers, and/or switches, provide a Web-based management engine for a network entity (e.g., the SmartZone device and/or one or more Ruckus access points, routers, or switches). As shown below, the systems utilize a web management interface.</p> <div><p>NETWORK CONTROLLER</p><p>Digital lifestyles sustained through mobile devices and applications, allow everyone to be more connected and productive, but concurrently intensify demands on operators, service providers and enterprises to improve network performance.</p><p>RUCKUS SmartZone network controllers simplify the complexity of scaling and managing wired switches, and wireless access points through a common interface to support private-cloud network-as-a-service (NaaS) offerings in addition to general enterprise networks. <u>All physical and virtual SmartZone appliances support network configuration, monitoring, provisioning, discovery, planning, troubleshooting, performance management, security and reporting. SmartZone's single, user-friendly web interface handles network visibility from the wireless edge to the network core and enabled IT administrators to perform day to day management tasks,</u> troubleshoot user connectivity problems and define and monitor user and application policies without requiring advanced network skills and CLI expertise.</p></div> <p>Source: SmartZone Data Sheet, p. 1</p>

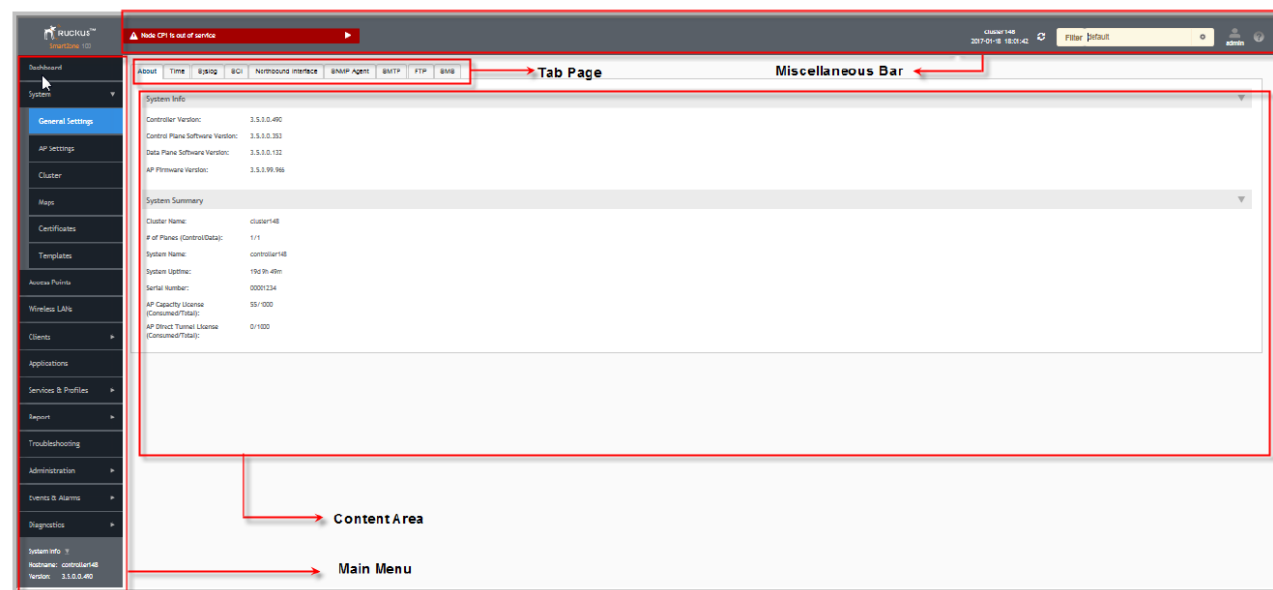
Claim 1	
<p>A Web-based management engine for a network entity, comprising:</p>	<p>The Ruckus systems utilize a web interface to manage network entities (e.g., Ruckus SmartZone devices, access points, routers, and/or switches).</p> <div> <p>Web Interface Features</p> <p><u>The web interface is the primary graphical front end for the controller and is the primary interface</u></p> <p>You can use it to:</p> <ul style="list-style-type: none"> • Manage access points and WLANs • Create and manage users and roles • Monitor wireless clients, managed devices, and rogue access points • View alarms, events, and administrator activity • Generate reports • Perform administrative tasks, including backing up and restoring system configuration, upgrading the cluster, downloading support , performing system diagnostic tests, viewing the status of controller processes, and uploading additional licenses (among others) </div> <p>Source: SmartZone Administrator Guide at p. 16</p>

Claim 1

A Web-based management engine for a network entity, comprising:

Below is an example of the SmartZone web-based interface.

FIGURE 1 Controller Web Interface Features



Source: SmartZone Administrator Guide at p. 17

Claim 1	
<p>an intelligent agent that obtains information about at least one operational parameter of the network entity and/or modifies the behavior of the network entity, the intelligent agent interacting with the network entity in accordance with a predetermined data structure;</p>	<p>The Ruckus systems utilize an intelligent agent that is used to obtain information about at least one operational parameter of the network entity and/or modify its behavior. For example, the SmartZone includes an internal SNMP agent, which is an intelligent agent.</p> <div style="border: 1px solid black; padding: 10px;"> <p>Enabling Global SNMP Notifications</p> <p>The controller supports the Simple Network Management Protocol (SNMP v2 and v3), which allows you to query controller information, such as system status, AP list, etc., and to set a number of system settings using a Network Management System (NMS) or SNMP MIB browser.</p> <p>You can also enable SNMP traps to receive immediate notifications for possible AP and system issues.</p> <p>The procedure for enabling the <u>internal SNMP agents</u> depends on whether your network is using SNMPv2 or SNMPv3. SNMPv3 mainly provides security enhancements over the earlier version, and therefore requires you to enter authorization passwords and encryption settings, instead of simple clear text community strings.</p> <p>Both SNMPv2 and SNMPv3 can be enabled at the same time. The SNMPv3 framework provides backward compatibility for SNMPv1 and SNMPv2c management applications so that existing management applications can still be used to manage the controller with SNMPv3 enabled.</p> <p>Configuring SNMP v2 Agent</p> <p>To configure SNMP v2 Agent settings:</p> <ol style="list-style-type: none"> 1. Go to System > General Settings > <u>SNMP Agent</u>. 2. Select the Enable SNMP Notifications Globally check box to send out notification messages. 3. To configure the SNMPv2 Agent, click Create and update the details as explained in the following table. </div> <p>Source: SmartZone Administrator Guide at p. 42</p>

Claim 1	
<p>an intelligent agent that obtains information about at least one operational parameter of the network entity and/or modifies the behavior of the network entity, the intelligent agent interacting with the network entity in accordance with a predetermined data structure;</p>	<p>Additionally, or alternatively, Ruckus's SmartZone-managed network entities, including Ruckus wireless Access Points are configured to be managed using the SmartZone</p> <div style="border: 1px solid black; padding: 10px;"> <h3 style="text-align: center;">Overview of the Ruckus Wireless AP</h3> <p>Congratulations on your purchase of the Ruckus Wireless AP! Ruckus Wireless APs are the industry's most easy to use, yet robust and feature-rich Wi-Fi APs designed to bring power and simplicity together for large-scale indoor deployments.</p> <p>Your Ruckus Wireless AP uses BeamFlex, a patented antenna technology from Ruckus Wireless that allows wireless signals to navigate around interference, extend wireless signal range, and increase speeds and capacity for wireless networks. The BeamFlex antenna system consists of an array of high-gain directional antenna elements that allow Ruckus Wireless APs to find quality signal paths in a changing environment, and sustain the baseline performance required for supporting data, audio and video applications.</p> <p>Your Ruckus Wireless AP can be deployed in standalone mode with or without a FlexMaster (FM) manager, or as part of the Ruckus Wireless Smart WLAN system, in which it can be managed by SmartCell Gateway (SCG), virtual SmartCell Gateway (vSCG), <u>SmartZone (SZ)</u>, ZoneDirector (ZD), and Smart Access Management service (SAMs) controllers.</p> <hr/> <p>NOTE For more information on the Ruckus Wireless system (including SCG, vSCG, SZ, ZD, SAMs and FM), BeamFlex, the Ruckus Wireless controller operating system (RuckOS), and other Ruckus Wireless technologies, visit www.ruckuswireless.com</p> <hr/> </div> <p>Source: Ruckus Access Point User Guide, p. 11</p>

Claim 1	
<p>an intelligent agent that obtains information about at least one operational parameter of the network entity and/or modifies the behavior of the network entity, the intelligent agent interacting with the network entity in accordance with a predetermined data structure;</p>	<p>The SmartZone-managed network entities are configured to be managed using SNMP. Thus, the entities include an SNMP agent, which is an intelligent agent.</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p><u>Configuring the AP for Management by a SmartCell Gateway (SCG), virtual SmartCell Gateway (vSCG), or SmartZone (SZ) Controller</u></p> <p>When your Ruckus Wireless network is managed by an SCG, vSCG or SZ controller, you can manage APs using the controller rather than individually logging into each AP's Web interface.</p> <p>If SCG, vSCG or SZ controllers are installed on the network, then follow the SCG, vSCG or SZ instructions to configure the controller, and then connect the AP to your network. The AP finds the SCG, vSCG or SZ, and then downloads the SCG-, vSCG- or SZ-compatible AP firmware from the SCG, vSCG or SZ controller.</p> </div> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p>3 If you want to use TR-069 or <u>SNMP to manage the AP</u>, configure the settings listed in <u>Table 46</u>.</p> </div> <p>Source: Ruckus Access Point User Guide, pp. 91, 150</p>

Claim 1																																																													
<p>an intelligent agent that obtains information about at least one operational parameter of the network entity and/or modifies the behavior of the network entity, the intelligent agent interacting with the network entity in accordance with a predetermined data structure;</p>	<p>Network entities that are configured to be managed by SmartZone include the following examples:</p> <table> <thead> <tr> <th>Device</th><th>Source</th></tr> </thead> <tbody> <tr> <td>Ruckus C110</td><td>http://www.ruckussecurity.com/ZoneFlex-C110.asp</td></tr> <tr> <td>Ruckus E510</td><td>http://www.ruckussecurity.com/ZoneFlex-E510.asp</td></tr> <tr> <td>Ruckus H320</td><td>http://www.ruckussecurity.com/ZoneFlex-H320.asp</td></tr> <tr> <td>Ruckus H510</td><td>http://www.ruckussecurity.com/ZoneFlex-H510.asp</td></tr> <tr> <td>Ruckus M510</td><td>http://www.ruckussecurity.com/ZoneFlex-C110.asp</td></tr> <tr> <td>Ruckus R310</td><td>http://www.ruckussecurity.com/ZoneFlex-R310.asp</td></tr> <tr> <td>Ruckus R320</td><td>http://www.ruckussecurity.com/ZoneFlex-R310.asp</td></tr> <tr> <td>Ruckus R510</td><td>http://www.ruckussecurity.com/ZoneFlex-R310.asp</td></tr> <tr> <td>Ruckus R550</td><td>http://www.ruckussecurity.com/ZoneFlex-R310.asp</td></tr> <tr> <td>Ruckus R610</td><td>http://www.ruckussecurity.com/ZoneFlex-R310.asp</td></tr> <tr> <td>Ruckus R650</td><td>http://www.ruckussecurity.com/ZoneFlex-R310.asp</td></tr> <tr> <td>Ruckus R710</td><td>http://www.ruckussecurity.com/ZoneFlex-R750.asp</td></tr> <tr> <td>Ruckus R720</td><td>http://www.ruckussecurity.com/ZoneFlex-R750.asp</td></tr> <tr> <td>Ruckus R730</td><td>http://www.ruckussecurity.com/ZoneFlex-R750.asp</td></tr> <tr> <td>Ruckus R750</td><td>http://www.ruckussecurity.com/ZoneFlex-R750.asp</td></tr> <tr> <td></td><td>https://www.ruckussecurity.com/ZoneFlex-R850.asp?utm_term=ruckus%20r850&utm_campaign=Ruckus+Wireless+*168&utm_source=adwords&utm_medium=ppc&hsa_tgt=kwd:919016351974&hsa_grp=102377129279&hsa_src=g&hsa_net=adwords&hsa_mt=e&hsa_ver=3&hsa_ad=44419949907&hsa_acc=9041622380&hsa_kw=ruckus%20r850&hsa_crm=36080881&gclid=CjwKCAjwmMX48RAAEiWAZM4JhzKXwNJuGSogdXlpOxENOR61wzibAltA6mqD4INeEePnhc3gQChoC5FYQAvD_BwE</td></tr> <tr> <td>Ruckus R850</td><td>https://webresources.ruckuswireless.com/datasheets/t305/ds-ruckus-t305.pdf</td></tr> <tr> <td>Ruckus T305</td><td>http://www.ruckussecurity.com/ZoneFlex-E510.asp</td></tr> <tr> <td>Ruckus T310</td><td>http://www.ruckussecurity.com/ZoneFlex-E510.asp</td></tr> <tr> <td>Ruckus T610</td><td>http://www.ruckussecurity.com/ZoneFlex-E510.asp</td></tr> <tr> <td>Ruckus T610S</td><td>http://www.ruckussecurity.com/ZoneFlex-E510.asp</td></tr> <tr> <td>Ruckus T710</td><td>http://www.ruckussecurity.com/ZoneFlex-E510.asp</td></tr> <tr> <td>Ruckus T750</td><td>http://www.ruckussecurity.com/ZoneFlex-E510.asp</td></tr> <tr> <td>Ruckus T811</td><td>http://www.ruckussecurity.com/datasheets/799-629-ds-ruckus-7781-cm.pdf</td></tr> <tr> <td>Ruckus ZoneFlex 7781</td><td>http://www.ruckussecurity.com/ZoneFlex-R500.asp</td></tr> <tr> <td>Ruckus ZoneFlex R500</td><td>http://www.ruckussecurity.com/ZoneFlex-R600.asp</td></tr> <tr> <td>Ruckus ZoneFlex R600</td><td>http://www.ruckussecurity.com/ZoneFlex-R700.asp?utm_term=zoneflex%20r700&utm_campaign=Ruckus+Wireless+*168&utm_source=adwords&utm_medium=ppc&hsa_tgt=kwd:64161560800&hsa_grp=11096537101&hsa_src=g&hsa_net=adwords&hsa_mt=e&hsa_ver=3&hsa_ad=39171980101&hsa_acc=9041622380&hsa_kw=zoneflex%20r700&hsa_crm=36080881&gclid=CjwKCAjwmMX48RAAEiWAZM4JyP1WQgWYfiDxpW-DJal3uKMf-ifirz71qepCWgXOon7CLXL9FGxoCstgQAvD_BwE</td></tr> <tr> <td>Ruckus ZoneFlex R700</td><td>http://www.ruckussecurity.com/datasheets/ds-zoneflex-t300-series.pdf</td></tr> <tr> <td>Ruckus ZoneFlex T300</td><td></td></tr> </tbody> </table>	Device	Source	Ruckus C110	http://www.ruckussecurity.com/ZoneFlex-C110.asp	Ruckus E510	http://www.ruckussecurity.com/ZoneFlex-E510.asp	Ruckus H320	http://www.ruckussecurity.com/ZoneFlex-H320.asp	Ruckus H510	http://www.ruckussecurity.com/ZoneFlex-H510.asp	Ruckus M510	http://www.ruckussecurity.com/ZoneFlex-C110.asp	Ruckus R310	http://www.ruckussecurity.com/ZoneFlex-R310.asp	Ruckus R320	http://www.ruckussecurity.com/ZoneFlex-R310.asp	Ruckus R510	http://www.ruckussecurity.com/ZoneFlex-R310.asp	Ruckus R550	http://www.ruckussecurity.com/ZoneFlex-R310.asp	Ruckus R610	http://www.ruckussecurity.com/ZoneFlex-R310.asp	Ruckus R650	http://www.ruckussecurity.com/ZoneFlex-R310.asp	Ruckus R710	http://www.ruckussecurity.com/ZoneFlex-R750.asp	Ruckus R720	http://www.ruckussecurity.com/ZoneFlex-R750.asp	Ruckus R730	http://www.ruckussecurity.com/ZoneFlex-R750.asp	Ruckus R750	http://www.ruckussecurity.com/ZoneFlex-R750.asp		https://www.ruckussecurity.com/ZoneFlex-R850.asp?utm_term=ruckus%20r850&utm_campaign=Ruckus+Wireless+*168&utm_source=adwords&utm_medium=ppc&hsa_tgt=kwd:919016351974&hsa_grp=102377129279&hsa_src=g&hsa_net=adwords&hsa_mt=e&hsa_ver=3&hsa_ad=44419949907&hsa_acc=9041622380&hsa_kw=ruckus%20r850&hsa_crm=36080881&gclid=CjwKCAjwmMX48RAAEiWAZM4JhzKXwNJuGSogdXlpOxENOR61wzibAltA6mqD4INeEePnhc3gQChoC5FYQAvD_BwE	Ruckus R850	https://webresources.ruckuswireless.com/datasheets/t305/ds-ruckus-t305.pdf	Ruckus T305	http://www.ruckussecurity.com/ZoneFlex-E510.asp	Ruckus T310	http://www.ruckussecurity.com/ZoneFlex-E510.asp	Ruckus T610	http://www.ruckussecurity.com/ZoneFlex-E510.asp	Ruckus T610S	http://www.ruckussecurity.com/ZoneFlex-E510.asp	Ruckus T710	http://www.ruckussecurity.com/ZoneFlex-E510.asp	Ruckus T750	http://www.ruckussecurity.com/ZoneFlex-E510.asp	Ruckus T811	http://www.ruckussecurity.com/datasheets/799-629-ds-ruckus-7781-cm.pdf	Ruckus ZoneFlex 7781	http://www.ruckussecurity.com/ZoneFlex-R500.asp	Ruckus ZoneFlex R500	http://www.ruckussecurity.com/ZoneFlex-R600.asp	Ruckus ZoneFlex R600	http://www.ruckussecurity.com/ZoneFlex-R700.asp?utm_term=zoneflex%20r700&utm_campaign=Ruckus+Wireless+*168&utm_source=adwords&utm_medium=ppc&hsa_tgt=kwd:64161560800&hsa_grp=11096537101&hsa_src=g&hsa_net=adwords&hsa_mt=e&hsa_ver=3&hsa_ad=39171980101&hsa_acc=9041622380&hsa_kw=zoneflex%20r700&hsa_crm=36080881&gclid=CjwKCAjwmMX48RAAEiWAZM4JyP1WQgWYfiDxpW-DJal3uKMf-ifirz71qepCWgXOon7CLXL9FGxoCstgQAvD_BwE	Ruckus ZoneFlex R700	http://www.ruckussecurity.com/datasheets/ds-zoneflex-t300-series.pdf	Ruckus ZoneFlex T300	
Device	Source																																																												
Ruckus C110	http://www.ruckussecurity.com/ZoneFlex-C110.asp																																																												
Ruckus E510	http://www.ruckussecurity.com/ZoneFlex-E510.asp																																																												
Ruckus H320	http://www.ruckussecurity.com/ZoneFlex-H320.asp																																																												
Ruckus H510	http://www.ruckussecurity.com/ZoneFlex-H510.asp																																																												
Ruckus M510	http://www.ruckussecurity.com/ZoneFlex-C110.asp																																																												
Ruckus R310	http://www.ruckussecurity.com/ZoneFlex-R310.asp																																																												
Ruckus R320	http://www.ruckussecurity.com/ZoneFlex-R310.asp																																																												
Ruckus R510	http://www.ruckussecurity.com/ZoneFlex-R310.asp																																																												
Ruckus R550	http://www.ruckussecurity.com/ZoneFlex-R310.asp																																																												
Ruckus R610	http://www.ruckussecurity.com/ZoneFlex-R310.asp																																																												
Ruckus R650	http://www.ruckussecurity.com/ZoneFlex-R310.asp																																																												
Ruckus R710	http://www.ruckussecurity.com/ZoneFlex-R750.asp																																																												
Ruckus R720	http://www.ruckussecurity.com/ZoneFlex-R750.asp																																																												
Ruckus R730	http://www.ruckussecurity.com/ZoneFlex-R750.asp																																																												
Ruckus R750	http://www.ruckussecurity.com/ZoneFlex-R750.asp																																																												
	https://www.ruckussecurity.com/ZoneFlex-R850.asp?utm_term=ruckus%20r850&utm_campaign=Ruckus+Wireless+*168&utm_source=adwords&utm_medium=ppc&hsa_tgt=kwd:919016351974&hsa_grp=102377129279&hsa_src=g&hsa_net=adwords&hsa_mt=e&hsa_ver=3&hsa_ad=44419949907&hsa_acc=9041622380&hsa_kw=ruckus%20r850&hsa_crm=36080881&gclid=CjwKCAjwmMX48RAAEiWAZM4JhzKXwNJuGSogdXlpOxENOR61wzibAltA6mqD4INeEePnhc3gQChoC5FYQAvD_BwE																																																												
Ruckus R850	https://webresources.ruckuswireless.com/datasheets/t305/ds-ruckus-t305.pdf																																																												
Ruckus T305	http://www.ruckussecurity.com/ZoneFlex-E510.asp																																																												
Ruckus T310	http://www.ruckussecurity.com/ZoneFlex-E510.asp																																																												
Ruckus T610	http://www.ruckussecurity.com/ZoneFlex-E510.asp																																																												
Ruckus T610S	http://www.ruckussecurity.com/ZoneFlex-E510.asp																																																												
Ruckus T710	http://www.ruckussecurity.com/ZoneFlex-E510.asp																																																												
Ruckus T750	http://www.ruckussecurity.com/ZoneFlex-E510.asp																																																												
Ruckus T811	http://www.ruckussecurity.com/datasheets/799-629-ds-ruckus-7781-cm.pdf																																																												
Ruckus ZoneFlex 7781	http://www.ruckussecurity.com/ZoneFlex-R500.asp																																																												
Ruckus ZoneFlex R500	http://www.ruckussecurity.com/ZoneFlex-R600.asp																																																												
Ruckus ZoneFlex R600	http://www.ruckussecurity.com/ZoneFlex-R700.asp?utm_term=zoneflex%20r700&utm_campaign=Ruckus+Wireless+*168&utm_source=adwords&utm_medium=ppc&hsa_tgt=kwd:64161560800&hsa_grp=11096537101&hsa_src=g&hsa_net=adwords&hsa_mt=e&hsa_ver=3&hsa_ad=39171980101&hsa_acc=9041622380&hsa_kw=zoneflex%20r700&hsa_crm=36080881&gclid=CjwKCAjwmMX48RAAEiWAZM4JyP1WQgWYfiDxpW-DJal3uKMf-ifirz71qepCWgXOon7CLXL9FGxoCstgQAvD_BwE																																																												
Ruckus ZoneFlex R700	http://www.ruckussecurity.com/datasheets/ds-zoneflex-t300-series.pdf																																																												
Ruckus ZoneFlex T300																																																													

Claim 1	
<p>an intelligent agent that obtains information about at least one operational parameter of the network entity and/or modifies the behavior of the network entity, the intelligent agent interacting with the network entity in accordance with a predetermined data structure;</p>	<p>The intelligent agent is used to obtain information about at least one operational parameter of the network entity and modify its behavior. For example, the SNMP agent uses the SNMP protocol for monitoring and management of the network entity (e.g., Ruckus's SmartZone controllers, switches, access points, and routers). In an SNMP based management system, an SNMP agent is present on a managed network entity to convey device data within the Ruckus system. Further, the intelligent agent interacts with the network entity in accordance with a predetermined data structure, such data structured according to the management information base ("MIB") specifications of the SNMP protocol (i.e., "MIBs")..</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p>NETWORK CONTROLLER</p> <p>Digital lifestyles sustained through mobile devices and applications, allow everyone to be more connected and productive, but concurrently intensify demands on operators, service providers and enterprises to improve network performance.</p> <p>RUCKUS SmartZone network controllers simplify the complexity of scaling and managing wired switches, and wireless access points through a common interface to support private-cloud network-as-a-service (NaaS) offerings in addition to general enterprise networks. All physical and virtual SmartZone appliances support network configuration, monitoring, provisioning, discovery, planning, troubleshooting, performance management, security and reporting. SmartZone's single, user-friendly web interface handles network visibility from the wireless edge to the network core and enabled IT administrators to perform day to day management tasks, troubleshoot user connectivity problems and define and monitor user and application policies without requiring advanced network skills and CLI expertise.</p> </div> <p>Source: SmartZone Data Sheet, p. 1</p>

Claim 1	
<p>an intelligent agent that obtains information about at least one operational parameter of the network entity and/or modifies the behavior of the network entity, the intelligent agent interacting with the network entity in accordance with a predetermined data structure;</p>	<p>Below shows examples of the Ruckus system obtaining information from and/or modifying the behavior of a network entity.</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p>Enabling Global SNMP Notifications</p> <p>The controller supports the Simple Network Management Protocol (SNMP v2 and v3), which allows you to <u>query controller information, such as system status, AP list, etc., and to set a number of system settings</u> using a Network Management System (NMS) or SNMP MIB browser.</p> <p><u>You can also enable SNMP traps to receive immediate notifications for possible AP and system issues.</u></p> <p>The procedure for enabling the internal SNMP agents depends on whether your network is using SNMPv2 or SNMPv3. SNMPv3 mainly provides security enhancements over the earlier version, and therefore requires you to enter authorization passwords and encryption settings, instead of simple clear text community strings.</p> <p>Both SNMPv2 and SNMPv3 can be enabled at the same time. The SNMPv3 framework provides backward compatibility for SNMPv1 and SNMPv2c management applications so that existing management applications can still be used to manage the controller with SNMPv3 enabled.</p> </div> <p>Source: SmartZone Administrator Guide at p. 42</p>

Claim 1	
<p>an intelligent agent that obtains information about at least one operational parameter of the network entity and/or modifies the behavior of the network entity, the intelligent agent interacting with the network entity in accordance with a predetermined data structure;</p>	<p>The excerpt below shows another example of the intelligent agent obtaining information about at least one operational parameter of the network entity (e.g., to display on the web interface) and modifying the behavior of the network entity (e.g., by enabling/disabling an SNMP trap or configuring other SNMP settings).</p> <div><h3>Overview</h3><p>This document describes the SNMP management information bases (MIBs) that the controller supports. It also describes the overall design of the controller SNMP agent. <u>The Smart Zone SNMP agent allows its northbound portal application to monitor the system via SNMP GET operation.</u> It also notifies the critical events by sending traps. The Smart Zone supports V2c community and V3 user versions of SNMP. <u>It also supports configuring the system via SNMP SET from this release.</u> See <u>Updating SNMP V2 and V3 Configuration Flow and SNMP Logs</u> on page 24.</p><p>NOTE</p><p>For information on how to <u>enable SNMP traps and configure the SNMP V2 and V3 settings on the controller web interface,</u> refer to the <i>Administrator Guide for SmartZone 3.1.1.</i></p></div> <p>Source: SmartZone SNMP Reference Guide, p. 23.</p>

Claim 1

an intelligent agent that obtains information about at least one operational parameter of the network entity and/or modifies the behavior of the network entity, the intelligent agent interacting with the network entity in accordance with a predetermined data structure;

The intelligent agent interacts with the network entity in accordance with a predetermined data structure (e.g., a MIB data structure). For example, the object identifier shown in the table below is related to the predetermined data structure (e.g., MIB).

Standard MIB

Standard MIBs that the controller supports include:

- [Host Resource MIB](#) on page 26
- [UCD MIB](#) on page 27
- [SNMPv2 MIB \(RFC3418\)](#) on page 27
- [RFC1213 MIB \(RFC1213\)](#) on page 27

ruckusSZSystemMiscEventTrap

TABLE 4 ruckusSZSystemMiscEventTrap

Object Name	ruckusSZSystemMiscEventTrap
Object Identifier	.1.3.6.1.4.1.25053.2.11.1.1
Bindings	ruckusSZEventSeverity ruckusSZEventCode ruckusSZEventType ruckusSZEventDescription
Description	Generic trap triggered by administrator specified miscellaneous event. The event severity, event code, event type, event description are displayed.
Generated by Event Code	Refer to SmartZone Event Traps on page 257 - ruckusSZSystemMiscEventTrap on page 257

Source: SmartZone SNMP Reference Guide, p. 26, 49.

Claim 1

an intelligent agent that obtains information about at least one operational parameter of the network entity and/or modifies the behavior of the network entity, the intelligent agent interacting with the network entity in accordance with a predetermined data structure;

Below is further examples of the intelligent agent interacting with the network entity in accordance with a MIB data structure.

Introduction

The objects contained in the RUCKUS-SZ-EVENT-MIB group provide information about the controller supported traps.

NOTE

For details on alarms and events refer to *SmartZone Alarms and Events Guide*.

Ruckus Event Trap

The following table lists the MIB, OID, and description of each object in the RUCKUS-SZ group.

Trap Name	Object Identifier
ruckusSZSystemMiscEventTrap on page 49	.1.3.6.1.4.1.25053.2.11.1.1
ruckusSZUpgradeSuccessTrap on page 49	.1.3.6.1.4.1.25053.2.11.1.2
ruckusSZUpgradeFailedTrap on page 50	.1.3.6.1.4.1.25053.2.11.1.3
ruckusSZNodeRestartedTrap on page 50	.1.3.6.1.4.1.25053.2.11.1.4
ruckusSZNodeShutdownTrap on page 51	.1.3.6.1.4.1.25053.2.11.1.5
ruckusSZCPUUsageThresholdExceededTrap on page 51	.1.3.6.1.4.1.25053.2.11.1.6
ruckusSZMemoryUsageThresholdExceededTrap on page 52	.1.3.6.1.4.1.25053.2.11.1.7
ruckusSZDiskUsageThresholdExceededTrap on page 52	.1.3.6.1.4.1.25053.2.11.1.8
ruckusSZLicenseUsageThresholdExceededTrap on page 53	.1.3.6.1.4.1.25053.2.11.1.19
ruckusSZAPMiscEventTrap on page 53	.1.3.6.1.4.1.25053.2.11.1.20
ruckusSZAPConnectedTrap on page 54	.1.3.6.1.4.1.25053.2.11.1.21
ruckusSZAPDeletedTrap on page 54	.1.3.6.1.4.1.25053.2.11.1.22
ruckusSZAPDisconnectedTrap on page 55	.1.3.6.1.4.1.25053.2.11.1.23
ruckusSZAPLostHeartbeatTrap on page 55	.1.3.6.1.4.1.25053.2.11.1.24
ruckusSZAPRebootTrap on page 56	.1.3.6.1.4.1.25053.2.11.1.25
ruckusSZCriticalAPConnectedTrap on page 56	.1.3.6.1.4.1.25053.2.11.1.26
ruckusSZCriticalAPDisconnectedTrap on page 57	.1.3.6.1.4.1.25053.2.11.1.27
ruckusSZAPRejectedTrap on page 58	.1.3.6.1.4.1.25053.2.11.1.28
ruckusSZAPConfUpdateFailedTrap on page 58	.1.3.6.1.4.1.25053.2.11.1.29
ruckusSZAPConfUpdatedTrap on page 59	.1.3.6.1.4.1.25053.2.11.1.30
ruckusSZAPSwapOutModelDiffTrap on page 59	.1.3.6.1.4.1.25053.2.11.1.31
ruckusSZAPPreProvisionModelDiffTrap on page 60	.1.3.6.1.4.1.25053.2.11.1.32
ruckusSZAPFirmwareUpdateFailedTrap on page 61	.1.3.6.1.4.1.25053.2.11.1.34
ruckusSZAPFirmwareUpdatedTrap on page 61	.1.3.6.1.4.1.25053.2.11.1.35

Source: SmartZone SNMP Reference Guide, p. 45.

Claim 1	
<p>a data store storing data relating to a procedure for managing the at least one operational parameter of the network entity;</p>	<p>The Ruckus system utilizes a data store (e.g., memory) storing data relating to a procedure for managing the at least one operational parameter of the network (for example, data stored in the form of MIBs).</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <h2 style="text-align: center; color: #D9534F;">Ruckus System MIB</h2> <hr style="border: 1px solid #D9534F; margin: 5px 0;"/> <ul style="list-style-type: none"> • Introduction..... 141 • Ruckus System Command (SysCommands)..... 143 • Ruckus Controller System Node Table..... 144 • Ruckus Controller Zone Table..... 148 <h2 style="color: #D9534F;">Introduction</h2> <p>The objects contained in the RUCKUS-SZ-SYSTEM-MIB <u>provide information about the controller system, including its WLAN traffic, managed APs, wireless clients associated with the managed APs, and CPU and memory utilization.</u> The following are the MIB definition system level statistics nodes for RUCKUS-SZ-SYSTEM-MIB.</p> </div> <p>Source: SmartZone SNMP Reference Guide, p. 141.</p>

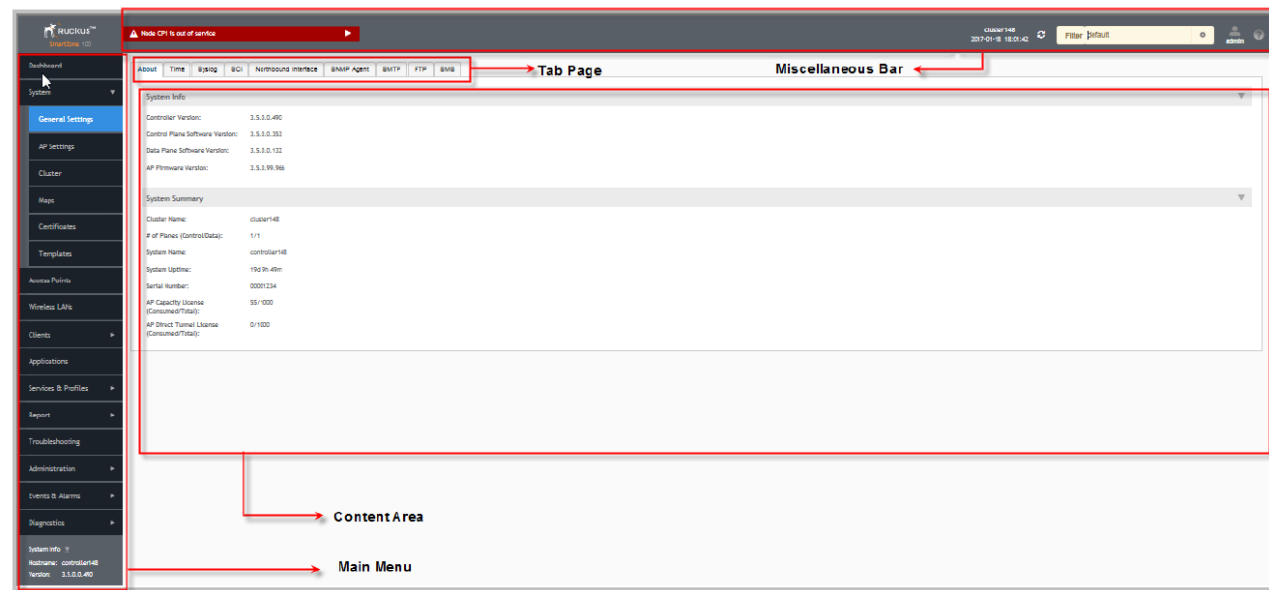
Claim 1	
<p>a Web server that provides an interactive environment to manage the at least one operational parameter of the network entity, and</p>	<p>The Ruckus system utilizes a web server (e.g. a server hosting the software used for the web interface) that provides an interactive environment (e.g. the web interface presented to a user through a web browser) to manage the at least one operational parameter of the network entity (e.g., enabling/disabling an SNMP trap or configuring other SNMP-related settings). For example, the excerpt below shows that the Ruckus SmartZone controllers include a web server.</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <h3 style="color: #D95319;">Logging On to the Web Interface</h3> <p>Before you can log on to the controller web interface, you must have the IP address that you assigned to the Management (Web) interface when you set up the controller on the network using the Setup Wizard.</p> <p>Once you have this IP address, you can access the web interface on any computer that can reach the Management (Web) interface on the IP network.</p> <p>Follow these steps to log on to the controller web interface.</p> <ol style="list-style-type: none"> 1. On a computer that is on the same subnet as the Management (Web) interface, start a web browser. <p>Supported web browsers include:</p> <ul style="list-style-type: none"> • Google Chrome 47 and later (recommended) • Safari 7 and later (Mac OS) • Mozilla Firefox 44 and later </div> <p>Source: SmartZone Administrator Guide at p. 15</p>

Claim 1

a Web server that provides an interactive environment to manage the at least one operational parameter of the network entity, and

As an example, the Web server provides the interactive environment shown below to manage the at least one operational parameter of the network entity.

FIGURE 1 Controller Web Interface Features



Source: SmartZone Administrator Guide at p. 17

Claim 1	
<p>a Web server that provides an interactive environment to manage the at least one operational parameter of the network entity, and</p>	<p>The Web-server, via the web interface, provides an interactive environment (e.g., input boxes, check boxes, buttons, drop-down menus, etc.) to manage at least one operational parameter (e.g., SNMP-related settings, such as enabling SNMP traps, configuring SNMP settings, and enabling SNMP notifications, as shown in the excerpts below) of the network entity.</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p>Overview</p> <p>This document describes the SNMP management information bases (MIBs) that the controller supports. It also describes the overall design of the controller SNMP agent. The Smart Zone SNMP agent allows its northbound portal application to monitor the system via SNMP GET operation. It also notifies the critical events by sending traps. The Smart Zone supports V2c community and V3 user versions of SNMP. It also supports configuring the system via SNMP SET from this release. See Updating SNMP V2 and V3 Configuration Flow and SNMP Logs on page 24.</p> <p>NOTE</p> <p>For information on how to <u>enable SNMP traps and configure the SNMP V2 and V3 settings on the controller web interface</u>, refer to the <i>Administrator Guide for SmartZone 3.1.1</i>.</p> </div> <p>Source: SmartZone SNMP Reference Guide, p. 23.</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p>Configuring SNMP v2 Agent</p> <p>To configure SNMP v2 Agent settings:</p> <ol style="list-style-type: none"> 1. Go to System > General Settings > SNMP Agent. 2. Select the Enable SNMP Notifications Globally <u>check box</u> to send out notification messages. 3. To configure the SNMPv2 Agent, click Create and update the details as explained in the following table. </div> <p>Source: SmartZone Administrator Guide at p. 42</p>

Claim 1	
<p>an interface that communicates values of the at least one operational parameter between the Web server and the intelligent agent in accordance with the predetermined data structure,</p>	<p>The Ruckus systems utilize an interface that communicates values of the at least one operation parameter between the Web server (e.g., the server hosting the web interface) and the intelligent agent (e.g., the SNMP agent) with a predetermined data structure (e.g. data structures utilized in an SNMP management system such as MIBs).</p> <div> <p>Enabling Global SNMP Notifications</p> <p>The controller supports the Simple Network Management Protocol (SNMP v2 and v3), which allows you to query controller information, such as system status, AP list, etc., and to set a number of system settings using a Network Management System (NMS) or SNMP MIB browser.</p> <p>You can also enable SNMP traps to receive immediate notifications for possible AP and system issues.</p> <p>The procedure for enabling the internal SNMP agents depends on whether your network is using SNMPv2 or SNMPv3. SNMPv3 mainly provides security enhancements over the earlier version, and therefore requires you to enter authorization passwords and encryption settings, instead of simple clear text community strings.</p> <p>Both SNMPv2 and SNMPv3 can be enabled at the same time. The SNMPv3 framework provides backward compatibility for SNMPv1 and SNMPv2c management applications so that existing management applications can still be used to manage the controller with SNMPv3 enabled.</p> </div> <div> <p>Web Interface Features</p> <p>The web interface is the primary graphical front end for the controller and is the primary interface</p> <p>You can use it to:</p> <ul style="list-style-type: none"> • Manage access points and WLANs • Create and manage users and roles • Monitor wireless clients, managed devices, and rogue access points • View alarms, events, and administrator activity • Generate reports • Perform administrative tasks, including backing up and restoring system configuration, upgrading the cluster, downloading support , performing system diagnostic tests, viewing the status of controller processes, and uploading additional licenses (among others) </div> <p>Source: SmartZone Administrator Guide at p. 42</p>

Claim 1	
<p>an interface that communicates values of the at least one operational parameter between the Web server and the intelligent agent in accordance with the predetermined data structure,</p>	<p>The Ruckus systems utilize an interface (e.g. an interface coupling the web server to the intelligent agent) that communicates values of the at least one operation parameter between the Web server (e.g., the server hosting the web interface) and the intelligent agent (e.g., the SNMP agent) with a predetermined data structure (e.g. data structures utilized in an SNMP management system such as MIBs).</p> <div><h3>Overview</h3><p>This document describes the SNMP management information bases (MIBs) that the controller supports. It also describes the overall design of the controller SNMP agent. <u>The Smart Zone SNMP agent allows its northbound portal application to monitor the system via SNMP GET operation.</u> It also notifies the critical events by sending traps. The Smart Zone supports V2c community and V3 user versions of SNMP. <u>It also supports configuring the system via SNMP SET from this release.</u> See <u>Updating SNMP V2 and V3 Configuration Flow and SNMP Logs</u> on page 24.</p><p>NOTE</p><p>For information on how to <u>enable SNMP traps and configure the SNMP V2 and V3 settings on the controller web interface,</u> refer to the <i>Administrator Guide for SmartZone 3.1.1.</i></p></div> <p>Source: SmartZone SNMP Reference Guide, p. 23.</p>

Claim 1	
<p>an interface that communicates values of the at least one operational parameter between the Web server and the intelligent agent in accordance with the predetermined data structure,</p>	<p>The Ruckus systems utilize an interface (e.g. an interface coupling the web server to the intelligent agent) that communicates values of the at least one operation parameter (e.g., value related to SNMP MIBS such as email alarm and email address settings) between the Web server (e.g., the server hosting the web interface) and the intelligent agent (e.g., the SNMP agent) with a predetermined data structure (e.g. data structures utilized in an SNMP management system such as MIBs).</p> <div style="border: 1px solid black; padding: 10px;"> <h3 style="color: #e67e22;">Sending SNMP Traps and Email Notifications for Events</h3> <p>By default, the controller saves a record of all events that occur to its database. You can configure the controller to also send SNMP traps and email notifications for specific events whenever they occur.</p> <p>Verify that global SNMP traps are enabled to ensure that the controller can send SNMP traps for alarms.</p> <p>You can also manage notifications of the event for each zone by clicking the zones displayed in the tree structure. Event configuration for each zone is independent including:</p> <ul style="list-style-type: none"> Enabling or disabling E-mail notification settings Recipient E-mail address Enabling or disabling DB persistence settings Enabling or disabling SNMP trap settings <p>You can also manually trigger SNMP traps without generating events using CLI. You can use the <code>#trigger-trap <event code></code> command to trigger traps for respective events with their default attributes.</p> <p>You can acquire the status of a specific client MAC address by using the query RUCKUS-CTRL-MIB. For more information, see the <i>SmartZone SNMP MIB Reference Guide</i>.</p> <ol style="list-style-type: none"> Go to Events and Alarms > Events. Click the Event Management tab. <p>The Event Management page appears displaying the following information:</p> <ul style="list-style-type: none"> Email Notification: Select the Enable check box, and then type an email address or email addresses in the Mail To box. If you want to send notifications to multiple recipients, use a comma to separate the email addresses. Then, click OK. Events: View the table and select the events for which you want to send traps or email notifications (or both). Select the Enable or Disable options from the drop-down menu, and configure the following: <ul style="list-style-type: none"> - Enable SNMP Notification: Click this link to enable SNMP trap notifications for all selected events. - Enable Email: Click this link to enable email notifications for all selected events. - Enable DB Persistence: Click this link to enable saving of all selected events to the controller database. If an event is already currently enabled, it will stay enabled after you click this link. <p>Following information related to the event are displayed:</p> <ul style="list-style-type: none"> Code: displays the event code. Severity: displays the severity of the event such as Information, Minor and so on. Category: displays the category under which the event falls under, such as AP communication. Type: displays the event type such as AP managed, Ap rejected and so on. Zone Override: display the override status of the zone. </div> <p>Source: SmartZone Administrator Guide, pp. 357-58.</p>

Claim 1

an interface that communicates values of the at least one operational parameter between the Web server and the intelligent agent in accordance with the predetermined data structure,

The Ruckus systems utilize a predetermined data structure (e.g., MIB structure) for communicating values of at least one operational parameter between the Web server and the intelligent agent.

ruckusCTRLSysCmdReboot

TABLE 244 ruckusCTRLSysCmdReboot

Object Name	ruckusCTRLSysCmdReboot
Parent Node	ruckusSZSystemStats
Object Identifier	.1.3.6.1.4.1.25053.1.4.1.1.15.13
Description	<p>This object defines the system command for SZ node. Command to reboot SZ is:</p> <ul style="list-style-type: none"> • 0- Normal (default value), which means that the system has completed the reboot command or the system has been rebooted. • 1 - Run-reboot - once the value is set as run-reboot, user cannot stop it until the system is setup again. Users can only set OID as this value. <p>NOTE This command may fail to reboot the system due to the cluster operation.</p> <p>If it set as reboot successfully, SNMP daemon will be stopped immediately. Therefore, it should wait until the system is up again. For example:</p> <pre>snmpset -v2c -c private -m1 172.17.50.100 RUCKUS-CTRL-MIB::ruckusCTRLSysCmdReboot.0 i run-reboot</pre>

Source: SmartZone SNMP Reference Guide, p. 144.

Claim 1

an interface that communicates values of the at least one operational parameter between the Web server and the intelligent agent in accordance with the predetermined data structure,

Below is a further example of the intelligent agent interacting with the network entity in accordance with a MIB data structure.

ruckusSZSystemMiscEventTrap

TABLE 4 ruckusSZSystemMiscEventTrap

Object Name	ruckusSZSystemMiscEventTrap
Object Identifier	.1.3.6.1.4.1.25053.2.11.1.1
Bindings	ruckusSZEventSeverity ruckusSZEventCode ruckusSZEventType ruckusSZEventDescription
Description	Generic trap triggered by administrator specified miscellaneous event. The event severity, event code, event type, event description are displayed.
Generated by Event Code	Refer to SmartZone Event Traps on page 257 - ruckusSZSystemMiscEventTrap on page 257

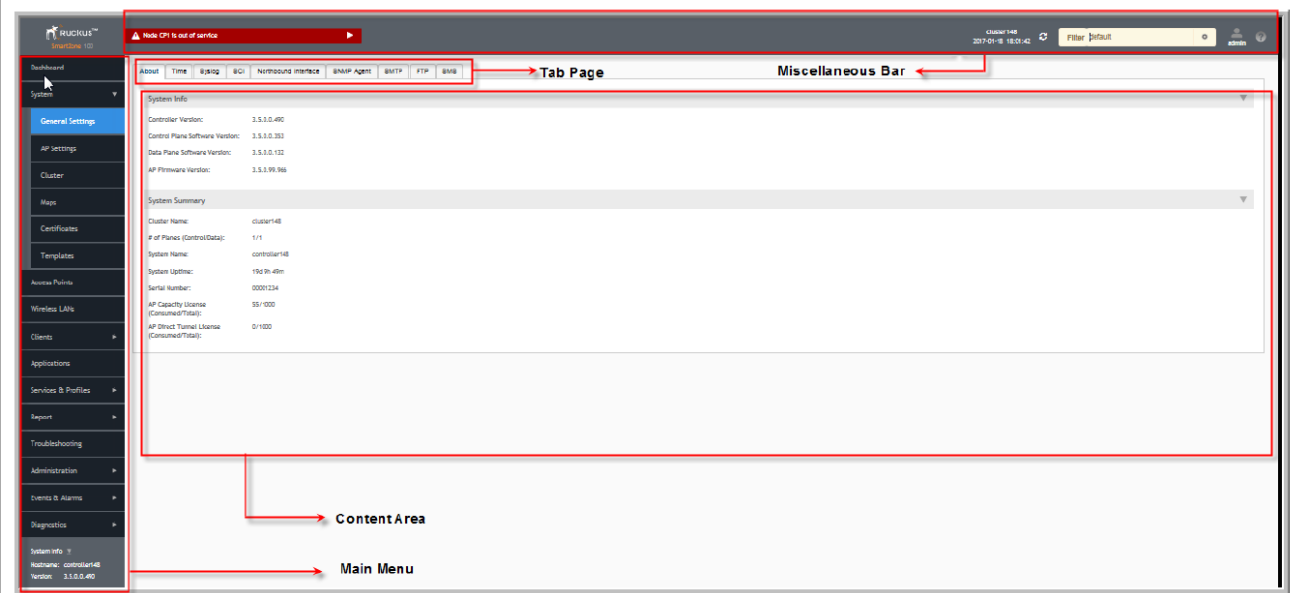
Source: SmartZone SNMP Reference Guide, p. 49.

Claim 1

wherein the Web server provides the interactive environment using the Web pages generated by a Web page generator, the Web page generator that generates a set of linked Web pages in response to a request to carry out a procedure, wherein each Web page of the set of linked Web pages being based upon the data stored in the data store and corresponding to at least one step in the procedure to manage the at least one operational parameter of the network entity,

The Ruckus systems utilize a web server (e.g. the server that host the web interface) which provides the interactive environment using web pages (e.g. the user interface is presented via a web browser using web pages) generated by a web page generator.

FIGURE 1 Controller Web Interface Features



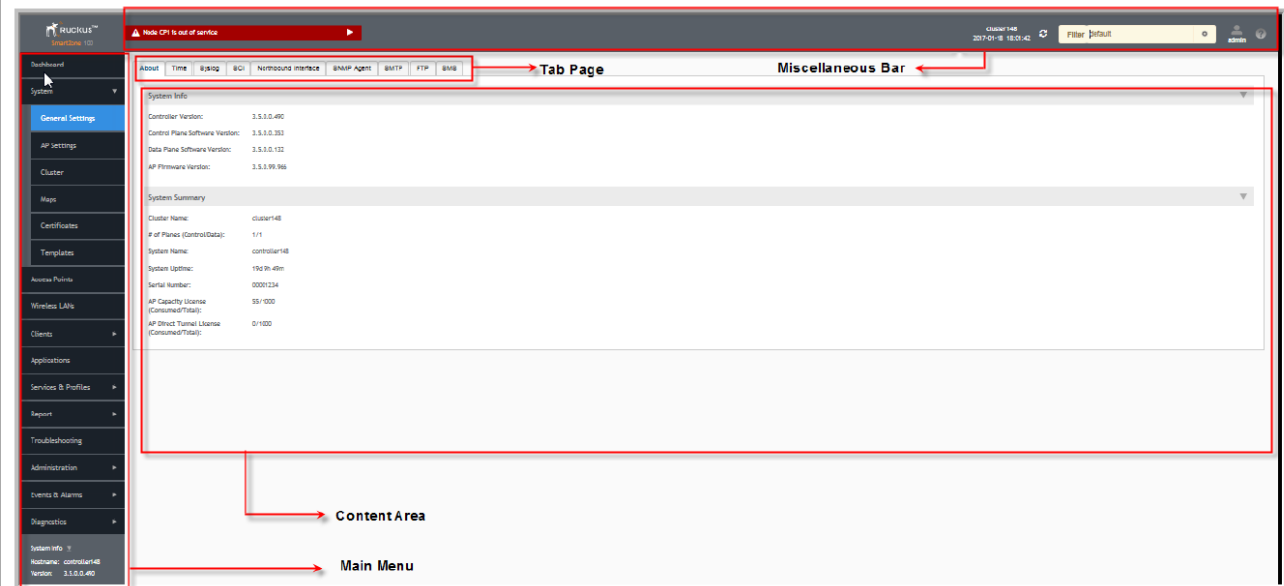
Source: SmartZone Administrator Guide at p. 17

Claim 1

wherein the Web server provides the interactive environment using the Web pages generated by a Web page generator, the Web page generator that generates a set of linked Web pages in response to a request to carry out a procedure, wherein each Web page of the set of linked Web pages being based upon the data stored in the data store and corresponding to at least one step in the procedure to manage the at least one operational parameter of the network entity,

The web page generator generates a set of linked webpages (e.g. the web pages to be sent to a user's browser) in response to a request to carry out a procedure (e.g. a user's request to obtain data or manage/configure a device). Each web page of the set of linked web pages is based upon data stored in the data store (e.g. menu's and configuration data displayed in the interface for a particular device will be based on device data stored in a data store such as an MIB) and corresponds to at least one step in the procedure to manage the at least one operation parameter of the network entity (e.g. the webpage is tied to management or configuration functions).

FIGURE 1 Controller Web Interface Features



Source: SmartZone Administrator Guide at p. 17

Claim 1

wherein the interface uses the stored data relating to a procedure for managing the at least one operational parameter of the network entity to generate a determination result indicating whether information retrieved using a form provided on the set of linked Web pages conforms to a rule relating to the procedure to manage the at least one operational parameter of the network entity, and

The interface uses the stored data (e.g. data in a MIB) relating to a procedure for managing the at least one operation parameter of the network entity (e.g. configuring or initiating an SNMP based command) to generate a determination result indicating whether information retrieved using a form provided on the set of linked web pages conforms to a rule relating to the procedure to manage the at least one operation parameter or the network entity. For example, when the information does not conform to a rule, the web interface may display an error message or generate an error routine.

Configuring SNMP v3 Agent

- Go to **System > General Settings > SNMP Agent**.
- Select the **Enable SNMP Notifications Globally** check box to send out notification messages.
- To configure the SNMPv3 Agent, click **Create** and update the details as explained in the following table.

TABLE 6 SNMPv3 Agent Settings

Field	Description	Your Action
Community	Indicates that applications which send SNMP Get Requests to the controller (to retrieve information) will need to send this string along with the request before they will be allowed access.	Enter a name.
Authentication	Indicates the authentication method.	<p>Choose the required option:</p> <ul style="list-style-type: none"> None—Use no authentication. SHA—Secure Hash Algorithm, message hash function with 160-bit output. <ol style="list-style-type: none"> Enter the Auth Pass Phrase. Choose the Privacy option. <ul style="list-style-type: none"> None: Use no privacy method. DES: Data Encryption Standard, data block cipher. AES: Advanced Encryption Standard, data block cipher. Enter a Privacy Phrase, 8 through 32 characters. MD5—Message Digest algorithm 5, message hash function with 128-bit output. <ol style="list-style-type: none"> Enter the Auth Pass Phrase. Choose the Privacy option. <ul style="list-style-type: none"> None: Use no privacy method. DES: Data Encryption Standard, data block cipher. AES: Advanced Encryption Standard, data block cipher. Enter a Privacy Phrase, 8 through 32 characters.

Source: SmartZone Administrator Guide at p. 43

Claim 1	
<p>wherein the interface communicates values to the intelligent agent based on the information retrieved from the form in response to the determination result indicating conformance.</p>	<p>The interface communicates values (e.g., values associated with enabling/disabling an SNMP trap or configuring other SNMP-related settings) to the intelligent agent (e.g., the SNMP agent) based on the information retrieved from the form (e.g., information input via the web interface) in response to the determination result indicating conformance (e.g. after confirming that any user input conforms to any rules, the data inputted will be communicated to an SNMP agent on the device for further processing). If the information has been entered correctly (i.e. “in conformance”), an error message may not appear or an “OK” button may be available, allowing communication of the values.</p> <div><p>NOTE You can also edit or delete an SNMPv3 agent. To do so, select the SNMPv3 agent from the list and click Configure or Delete respectively.</p><p>4. Click OK.</p></div> <p>Source: SmartZone Administrator Guide at p. 44</p>

Claim 8	
<p>A Web-based management system comprising a Web-based management engine comprising:</p>	<p>Ruckus systems, for example, the SmartZone300, SmartZone100 and/or the SmartZone300 or SmartZone100 in conjunction with access points, routers, and/or switches, provide a Web-based management engine for a network entity (e.g., the SmartZone device and/or one or more Ruckus access points, routers, or switches). As shown below, the systems utilize a web management interface.</p> <div style="border: 1px solid black; padding: 10px;"> <p>NETWORK CONTROLLER</p> <p>Digital lifestyles sustained through mobile devices and applications, allow everyone to be more connected and productive, but concurrently intensify demands on operators, service providers and enterprises to improve network performance.</p> <p>RUCKUS SmartZone network controllers simplify the complexity of scaling and managing wired switches, and wireless access points through a common interface to support private-cloud network-as-a-service (NaaS) offerings in addition to general enterprise networks. <u>All physical and virtual SmartZone appliances support network configuration, monitoring, provisioning, discovery, planning, troubleshooting, performance management, security and reporting. SmartZone's single, user-friendly web interface handles network visibility from the wireless edge to the network core and enabled IT administrators to perform day to day management tasks,</u> troubleshoot user connectivity problems and define and monitor user and application policies without requiring advanced network skills and CLI expertise.</p> </div> <p>Source: SmartZone Data Sheet, p. 1</p>

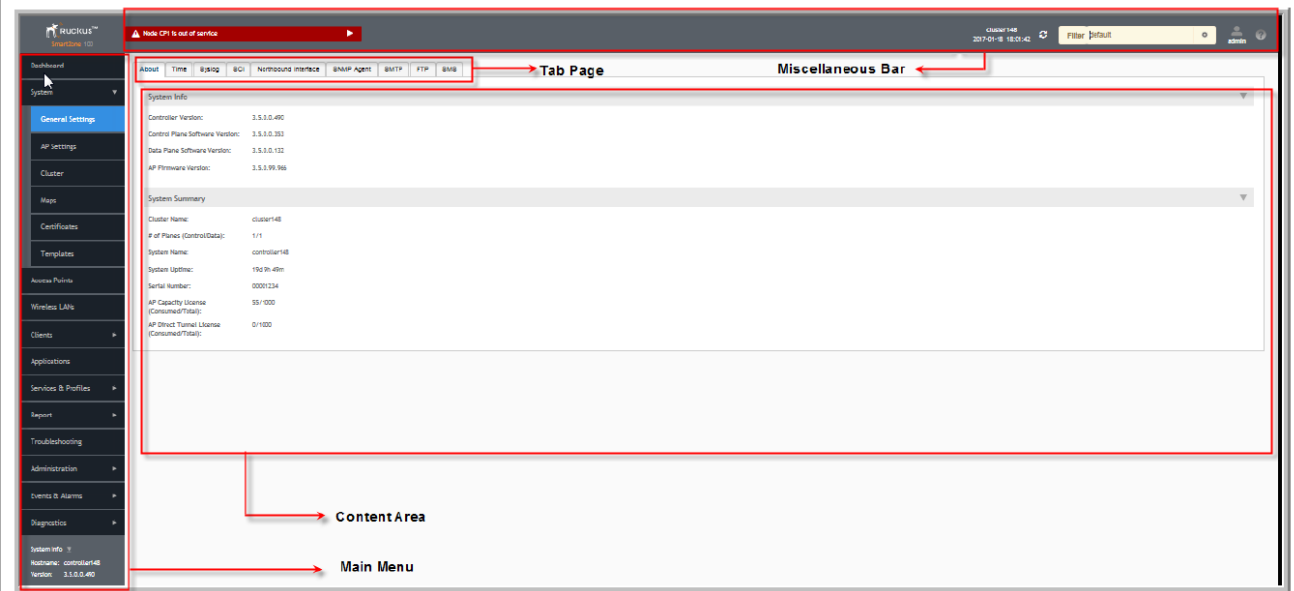
Claim 8	
<p>A Web-based management system comprising a Web-based management engine comprising:</p>	<p>The Ruckus systems utilize a web interface to manage network entities (e.g., Ruckus SmartZone devices, access points, routers, and/or switches).</p> <div> <p>Web Interface Features</p> <p><u>The web interface is the primary graphical front end for the controller and is the primary interface</u></p> <p>You can use it to:</p> <ul style="list-style-type: none"> • Manage access points and WLANs • Create and manage users and roles • Monitor wireless clients, managed devices, and rogue access points • View alarms, events, and administrator activity • Generate reports • Perform administrative tasks, including backing up and restoring system configuration, upgrading the cluster, downloading support , performing system diagnostic tests, viewing the status of controller processes, and uploading additional licenses (among others) </div> <p>Source: SmartZone Administrator Guide at p. 16</p>

Claim 8

A Web-based management system comprising a Web-based management engine comprising:

Below is an example of the SmartZone web-based interface.

FIGURE 1 Controller Web Interface Features



Source: SmartZone Administrator Guide at p. 17

Claim 8	
<p>an intelligent agent that obtains information about at least one operational parameter of the network entity and/or modifies the behavior of the network entity, the intelligent agent interacting with the network entity in accordance with a predetermined data structure;</p>	<p>The Ruckus systems utilize an intelligent agent that is used to obtain information about at least one operational parameter of the network entity and/or modify its behavior. For example, the SmartZone includes an internal SNMP agent, which is an intelligent agent.</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p>Enabling Global SNMP Notifications</p> <p>The controller supports the Simple Network Management Protocol (SNMP v2 and v3), which allows you to query controller information, such as system status, AP list, etc., and to set a number of system settings using a Network Management System (NMS) or SNMP MIB browser.</p> <p>You can also enable SNMP traps to receive immediate notifications for possible AP and system issues.</p> <p>The procedure for enabling the <u>internal SNMP agents</u> depends on whether your network is using SNMPv2 or SNMPv3. SNMPv3 mainly provides security enhancements over the earlier version, and therefore requires you to enter authorization passwords and encryption settings, instead of simple clear text community strings.</p> <p>Both SNMPv2 and SNMPv3 can be enabled at the same time. The SNMPv3 framework provides backward compatibility for SNMPv1 and SNMPv2c management applications so that existing management applications can still be used to manage the controller with SNMPv3 enabled.</p> <p>Configuring SNMP v2 Agent</p> <p>To configure SNMP v2 Agent settings:</p> <ol style="list-style-type: none"> 1. Go to System > General Settings > <u>SNMP Agent</u>. 2. Select the Enable SNMP Notifications Globally check box to send out notification messages. 3. To configure the SNMPv2 Agent, click Create and update the details as explained in the following table. </div> <p>Source: SmartZone Administrator Guide at p. 42</p>

Claim 8	
<p>an intelligent agent that obtains information about at least one operational parameter of the network entity and/or modifies the behavior of the network entity, the intelligent agent interacting with the network entity in accordance with a predetermined data structure;</p>	<p>Additionally, or alternatively, Ruckus's SmartZone-managed network entities, including Ruckus wireless Access Points are configured to be managed using the SmartZone</p> <div style="border: 1px solid black; padding: 10px;"> <h3 style="text-align: center;">Overview of the Ruckus Wireless AP</h3> <p>Congratulations on your purchase of the Ruckus Wireless AP! Ruckus Wireless APs are the industry's most easy to use, yet robust and feature-rich Wi-Fi APs designed to bring power and simplicity together for large-scale indoor deployments.</p> <p>Your Ruckus Wireless AP uses BeamFlex, a patented antenna technology from Ruckus Wireless that allows wireless signals to navigate around interference, extend wireless signal range, and increase speeds and capacity for wireless networks. The BeamFlex antenna system consists of an array of high-gain directional antenna elements that allow Ruckus Wireless APs to find quality signal paths in a changing environment, and sustain the baseline performance required for supporting data, audio and video applications.</p> <p>Your Ruckus Wireless AP can be deployed in standalone mode with or without a FlexMaster (FM) manager, or as part of the Ruckus Wireless Smart WLAN system, in which it can be managed by SmartCell Gateway (SCG), virtual SmartCell Gateway (vSCG), <u>SmartZone (SZ)</u>, ZoneDirector (ZD), and Smart Access Management service (SAMs) controllers.</p> <hr/> <p>NOTE For more information on the Ruckus Wireless system (including SCG, vSCG, SZ, ZD, SAMs and FM), BeamFlex, the Ruckus Wireless controller operating system (RuckOS), and other Ruckus Wireless technologies, visit www.ruckuswireless.com</p> <hr/> </div> <p>Source: Ruckus Access Point User Guide, p. 11</p>

Claim 8	
<p>an intelligent agent that obtains information about at least one operational parameter of the network entity and/or modifies the behavior of the network entity, the intelligent agent interacting with the network entity in accordance with a predetermined data structure;</p>	<p>The SmartZone-managed network entities are configured to be managed using SNMP. Thus, the entities include an SNMP agent, which is an intelligent agent.</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p><u>Configuring the AP for Management by a SmartCell Gateway (SCG), virtual SmartCell Gateway (vSCG), or SmartZone (SZ) Controller</u></p> <p>When your Ruckus Wireless network is managed by an SCG, vSCG or SZ controller, you can manage APs using the controller rather than individually logging into each AP's Web interface.</p> <p>If SCG, vSCG or SZ controllers are installed on the network, then follow the SCG, vSCG or SZ instructions to configure the controller, and then connect the AP to your network. The AP finds the SCG, vSCG or SZ, and then downloads the SCG-, vSCG- or SZ-compatible AP firmware from the SCG, vSCG or SZ controller.</p> </div> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p>3 If you want to use TR-069 or <u>SNMP to manage the AP</u>, configure the settings listed in Table 46.</p> </div> <p>Source: Ruckus Access Point User Guide, pp. 91, 150</p>

Claim 8																																																													
<p>an intelligent agent that obtains information about at least one operational parameter of the network entity and/or modifies the behavior of the network entity, the intelligent agent interacting with the network entity in accordance with a predetermined data structure;</p>	<p>Network entities that are configured to be managed by SmartZone include the following examples:</p> <table border="1"> <thead> <tr> <th>Device</th><th>Source</th></tr> </thead> <tbody> <tr> <td>Ruckus C110</td><td>http://www.ruckussecurity.com/ZoneFlex-C110.asp</td></tr> <tr> <td>Ruckus E510</td><td>http://www.ruckussecurity.com/ZoneFlex-E510.asp</td></tr> <tr> <td>Ruckus H320</td><td>http://www.ruckussecurity.com/ZoneFlex-H320.asp</td></tr> <tr> <td>Ruckus H510</td><td>http://www.ruckussecurity.com/ZoneFlex-H510.asp</td></tr> <tr> <td>Ruckus M510</td><td>http://www.ruckussecurity.com/ZoneFlex-C110.asp</td></tr> <tr> <td>Ruckus R310</td><td>http://www.ruckussecurity.com/ZoneFlex-R310.asp</td></tr> <tr> <td>Ruckus R320</td><td>http://www.ruckussecurity.com/ZoneFlex-R310.asp</td></tr> <tr> <td>Ruckus R510</td><td>http://www.ruckussecurity.com/ZoneFlex-R310.asp</td></tr> <tr> <td>Ruckus R550</td><td>http://www.ruckussecurity.com/ZoneFlex-R310.asp</td></tr> <tr> <td>Ruckus R610</td><td>http://www.ruckussecurity.com/ZoneFlex-R310.asp</td></tr> <tr> <td>Ruckus R650</td><td>http://www.ruckussecurity.com/ZoneFlex-R310.asp</td></tr> <tr> <td>Ruckus R710</td><td>http://www.ruckussecurity.com/ZoneFlex-R750.asp</td></tr> <tr> <td>Ruckus R720</td><td>http://www.ruckussecurity.com/ZoneFlex-R750.asp</td></tr> <tr> <td>Ruckus R730</td><td>http://www.ruckussecurity.com/ZoneFlex-R750.asp</td></tr> <tr> <td>Ruckus R750</td><td>http://www.ruckussecurity.com/ZoneFlex-R750.asp</td></tr> <tr> <td></td><td>https://www.ruckussecurity.com/ZoneFlex-R850.asp?utm_term=ruckus%20r850&utm_campaign=Ruckus+Wireless+*168&utm_source=adwords&utm_medium=ppc&hsa_tgt=kwd:919016351974&hsa_grp=102377129279&hsa_src=g&hsa_net=adwords&hsa_mt=e&hsa_ver=3&hsa_ad=44419949907&hsa_acc=9041622380&hsa_kw=ruckus%20r850&hsa_crm=36080881&gclid=CjwKAjwmMX48RAAEiWAZM4JhZKXwNJuGSogdXlpOxENOR61wzibAltA6mqD4INeEePnhc3gQChoC5FYQAvD_BwE</td></tr> <tr> <td>Ruckus R850</td><td>https://webresources.ruckuswireless.com/datasheets/t305/ds-ruckus-t305.pdf</td></tr> <tr> <td>Ruckus T305</td><td>http://www.ruckussecurity.com/ZoneFlex-E510.asp</td></tr> <tr> <td>Ruckus T310</td><td>http://www.ruckussecurity.com/ZoneFlex-E510.asp</td></tr> <tr> <td>Ruckus T610</td><td>http://www.ruckussecurity.com/ZoneFlex-E510.asp</td></tr> <tr> <td>Ruckus T610S</td><td>http://www.ruckussecurity.com/ZoneFlex-E510.asp</td></tr> <tr> <td>Ruckus T710</td><td>http://www.ruckussecurity.com/ZoneFlex-E510.asp</td></tr> <tr> <td>Ruckus T750</td><td>http://www.ruckussecurity.com/ZoneFlex-E510.asp</td></tr> <tr> <td>Ruckus T811</td><td>http://www.ruckussecurity.com/datasheets/799-629-ds-ruckus-7781-cm.pdf</td></tr> <tr> <td>Ruckus ZoneFlex 7781</td><td>http://www.ruckussecurity.com/ZoneFlex-R500.asp</td></tr> <tr> <td>Ruckus ZoneFlex R500</td><td>http://www.ruckussecurity.com/ZoneFlex-R600.asp</td></tr> <tr> <td>Ruckus ZoneFlex R600</td><td>http://www.ruckussecurity.com/ZoneFlex-R700.asp?utm_term=zoneflex%20r700&utm_campaign=Ruckus+Wireless+*168&utm_source=adwords&utm_medium=ppc&hsa_tgt=kwd:64161560800&hsa_grp=11096537101&hsa_src=g&hsa_net=adwords&hsa_mt=e&hsa_ver=3&hsa_ad=39171980101&hsa_acc=9041622380&hsa_kw=zoneflex%20r700&hsa_crm=36080881&gclid=CjwKAjwmMX48RAAEiWAZM4JhZKXwNJuGSogdXlpOxENOR61wzibAltA6mqD4INeEePnhc3gQChoC5FYQAvD_BwE</td></tr> <tr> <td>Ruckus ZoneFlex R700</td><td>http://www.ruckussecurity.com/datasheets/ds-zoneflex-t300-series.pdf</td></tr> <tr> <td>Ruckus ZoneFlex T300</td><td></td></tr> </tbody> </table>	Device	Source	Ruckus C110	http://www.ruckussecurity.com/ZoneFlex-C110.asp	Ruckus E510	http://www.ruckussecurity.com/ZoneFlex-E510.asp	Ruckus H320	http://www.ruckussecurity.com/ZoneFlex-H320.asp	Ruckus H510	http://www.ruckussecurity.com/ZoneFlex-H510.asp	Ruckus M510	http://www.ruckussecurity.com/ZoneFlex-C110.asp	Ruckus R310	http://www.ruckussecurity.com/ZoneFlex-R310.asp	Ruckus R320	http://www.ruckussecurity.com/ZoneFlex-R310.asp	Ruckus R510	http://www.ruckussecurity.com/ZoneFlex-R310.asp	Ruckus R550	http://www.ruckussecurity.com/ZoneFlex-R310.asp	Ruckus R610	http://www.ruckussecurity.com/ZoneFlex-R310.asp	Ruckus R650	http://www.ruckussecurity.com/ZoneFlex-R310.asp	Ruckus R710	http://www.ruckussecurity.com/ZoneFlex-R750.asp	Ruckus R720	http://www.ruckussecurity.com/ZoneFlex-R750.asp	Ruckus R730	http://www.ruckussecurity.com/ZoneFlex-R750.asp	Ruckus R750	http://www.ruckussecurity.com/ZoneFlex-R750.asp		https://www.ruckussecurity.com/ZoneFlex-R850.asp?utm_term=ruckus%20r850&utm_campaign=Ruckus+Wireless+*168&utm_source=adwords&utm_medium=ppc&hsa_tgt=kwd:919016351974&hsa_grp=102377129279&hsa_src=g&hsa_net=adwords&hsa_mt=e&hsa_ver=3&hsa_ad=44419949907&hsa_acc=9041622380&hsa_kw=ruckus%20r850&hsa_crm=36080881&gclid=CjwKAjwmMX48RAAEiWAZM4JhZKXwNJuGSogdXlpOxENOR61wzibAltA6mqD4INeEePnhc3gQChoC5FYQAvD_BwE	Ruckus R850	https://webresources.ruckuswireless.com/datasheets/t305/ds-ruckus-t305.pdf	Ruckus T305	http://www.ruckussecurity.com/ZoneFlex-E510.asp	Ruckus T310	http://www.ruckussecurity.com/ZoneFlex-E510.asp	Ruckus T610	http://www.ruckussecurity.com/ZoneFlex-E510.asp	Ruckus T610S	http://www.ruckussecurity.com/ZoneFlex-E510.asp	Ruckus T710	http://www.ruckussecurity.com/ZoneFlex-E510.asp	Ruckus T750	http://www.ruckussecurity.com/ZoneFlex-E510.asp	Ruckus T811	http://www.ruckussecurity.com/datasheets/799-629-ds-ruckus-7781-cm.pdf	Ruckus ZoneFlex 7781	http://www.ruckussecurity.com/ZoneFlex-R500.asp	Ruckus ZoneFlex R500	http://www.ruckussecurity.com/ZoneFlex-R600.asp	Ruckus ZoneFlex R600	http://www.ruckussecurity.com/ZoneFlex-R700.asp?utm_term=zoneflex%20r700&utm_campaign=Ruckus+Wireless+*168&utm_source=adwords&utm_medium=ppc&hsa_tgt=kwd:64161560800&hsa_grp=11096537101&hsa_src=g&hsa_net=adwords&hsa_mt=e&hsa_ver=3&hsa_ad=39171980101&hsa_acc=9041622380&hsa_kw=zoneflex%20r700&hsa_crm=36080881&gclid=CjwKAjwmMX48RAAEiWAZM4JhZKXwNJuGSogdXlpOxENOR61wzibAltA6mqD4INeEePnhc3gQChoC5FYQAvD_BwE	Ruckus ZoneFlex R700	http://www.ruckussecurity.com/datasheets/ds-zoneflex-t300-series.pdf	Ruckus ZoneFlex T300	
Device	Source																																																												
Ruckus C110	http://www.ruckussecurity.com/ZoneFlex-C110.asp																																																												
Ruckus E510	http://www.ruckussecurity.com/ZoneFlex-E510.asp																																																												
Ruckus H320	http://www.ruckussecurity.com/ZoneFlex-H320.asp																																																												
Ruckus H510	http://www.ruckussecurity.com/ZoneFlex-H510.asp																																																												
Ruckus M510	http://www.ruckussecurity.com/ZoneFlex-C110.asp																																																												
Ruckus R310	http://www.ruckussecurity.com/ZoneFlex-R310.asp																																																												
Ruckus R320	http://www.ruckussecurity.com/ZoneFlex-R310.asp																																																												
Ruckus R510	http://www.ruckussecurity.com/ZoneFlex-R310.asp																																																												
Ruckus R550	http://www.ruckussecurity.com/ZoneFlex-R310.asp																																																												
Ruckus R610	http://www.ruckussecurity.com/ZoneFlex-R310.asp																																																												
Ruckus R650	http://www.ruckussecurity.com/ZoneFlex-R310.asp																																																												
Ruckus R710	http://www.ruckussecurity.com/ZoneFlex-R750.asp																																																												
Ruckus R720	http://www.ruckussecurity.com/ZoneFlex-R750.asp																																																												
Ruckus R730	http://www.ruckussecurity.com/ZoneFlex-R750.asp																																																												
Ruckus R750	http://www.ruckussecurity.com/ZoneFlex-R750.asp																																																												
	https://www.ruckussecurity.com/ZoneFlex-R850.asp?utm_term=ruckus%20r850&utm_campaign=Ruckus+Wireless+*168&utm_source=adwords&utm_medium=ppc&hsa_tgt=kwd:919016351974&hsa_grp=102377129279&hsa_src=g&hsa_net=adwords&hsa_mt=e&hsa_ver=3&hsa_ad=44419949907&hsa_acc=9041622380&hsa_kw=ruckus%20r850&hsa_crm=36080881&gclid=CjwKAjwmMX48RAAEiWAZM4JhZKXwNJuGSogdXlpOxENOR61wzibAltA6mqD4INeEePnhc3gQChoC5FYQAvD_BwE																																																												
Ruckus R850	https://webresources.ruckuswireless.com/datasheets/t305/ds-ruckus-t305.pdf																																																												
Ruckus T305	http://www.ruckussecurity.com/ZoneFlex-E510.asp																																																												
Ruckus T310	http://www.ruckussecurity.com/ZoneFlex-E510.asp																																																												
Ruckus T610	http://www.ruckussecurity.com/ZoneFlex-E510.asp																																																												
Ruckus T610S	http://www.ruckussecurity.com/ZoneFlex-E510.asp																																																												
Ruckus T710	http://www.ruckussecurity.com/ZoneFlex-E510.asp																																																												
Ruckus T750	http://www.ruckussecurity.com/ZoneFlex-E510.asp																																																												
Ruckus T811	http://www.ruckussecurity.com/datasheets/799-629-ds-ruckus-7781-cm.pdf																																																												
Ruckus ZoneFlex 7781	http://www.ruckussecurity.com/ZoneFlex-R500.asp																																																												
Ruckus ZoneFlex R500	http://www.ruckussecurity.com/ZoneFlex-R600.asp																																																												
Ruckus ZoneFlex R600	http://www.ruckussecurity.com/ZoneFlex-R700.asp?utm_term=zoneflex%20r700&utm_campaign=Ruckus+Wireless+*168&utm_source=adwords&utm_medium=ppc&hsa_tgt=kwd:64161560800&hsa_grp=11096537101&hsa_src=g&hsa_net=adwords&hsa_mt=e&hsa_ver=3&hsa_ad=39171980101&hsa_acc=9041622380&hsa_kw=zoneflex%20r700&hsa_crm=36080881&gclid=CjwKAjwmMX48RAAEiWAZM4JhZKXwNJuGSogdXlpOxENOR61wzibAltA6mqD4INeEePnhc3gQChoC5FYQAvD_BwE																																																												
Ruckus ZoneFlex R700	http://www.ruckussecurity.com/datasheets/ds-zoneflex-t300-series.pdf																																																												
Ruckus ZoneFlex T300																																																													

Claim 8	
<p>an intelligent agent that obtains information about at least one operational parameter of the network entity and/or modifies the behavior of the network entity, the intelligent agent interacting with the network entity in accordance with a predetermined data structure;</p>	<p>The intelligent agent is used to obtain information about at least one operational parameter of the network entity and modify its behavior. For example, the SNMP agent uses the SNMP protocol for monitoring and management of the network entity (e.g., Ruckus's SmartZone controllers, switches, access points, and routers). In an SNMP based management system, an SNMP agent is present on a managed network entity to convey device data within the Ruckus system. Further, the intelligent agent interacts with the network entity in accordance with a predetermined data structure, such data structured according to the management information base ("MIB") specifications of the SNMP protocol (i.e., "MIBs").</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p>NETWORK CONTROLLER</p> <p>Digital lifestyles sustained through mobile devices and applications, allow everyone to be more connected and productive, but concurrently intensify demands on operators, service providers and enterprises to improve network performance.</p> <p>RUCKUS SmartZone network controllers simplify the complexity of scaling and managing wired switches, and wireless access points through a common interface to support private-cloud network-as-a-service (NaaS) offerings in addition to general enterprise networks. All physical and virtual SmartZone appliances support network configuration, monitoring, provisioning, discovery, planning, troubleshooting, performance management, security and reporting. SmartZone's single, user-friendly web interface handles network visibility from the wireless edge to the network core and enabled IT administrators to perform day to day management tasks, troubleshoot user connectivity problems and define and monitor user and application policies without requiring advanced network skills and CLI expertise.</p> </div> <p>Source: SmartZone Data Sheet, p. 1</p>

Claim 8	
<p>an intelligent agent that obtains information about at least one operational parameter of the network entity and/or modifies the behavior of the network entity, the intelligent agent interacting with the network entity in accordance with a predetermined data structure;</p>	<p>Below shows examples of the Ruckus system obtaining information from and/or modifying the behavior of a network entity.</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p>Enabling Global SNMP Notifications</p> <p>The controller supports the Simple Network Management Protocol (SNMP v2 and v3), which allows you to <u>query controller information, such as system status, AP list, etc., and to set a number of system settings</u> using a Network Management System (NMS) or SNMP MIB browser.</p> <p><u>You can also enable SNMP traps to receive immediate notifications for possible AP and system issues.</u></p> <p>The procedure for enabling the internal SNMP agents depends on whether your network is using SNMPv2 or SNMPv3. SNMPv3 mainly provides security enhancements over the earlier version, and therefore requires you to enter authorization passwords and encryption settings, instead of simple clear text community strings.</p> <p>Both SNMPv2 and SNMPv3 can be enabled at the same time. The SNMPv3 framework provides backward compatibility for SNMPv1 and SNMPv2c management applications so that existing management applications can still be used to manage the controller with SNMPv3 enabled.</p> </div> <p>Source: SmartZone Administrator Guide at p. 42</p>

Claim 8	
<p>an intelligent agent that obtains information about at least one operational parameter of the network entity and/or modifies the behavior of the network entity, the intelligent agent interacting with the network entity in accordance with a predetermined data structure;</p>	<p>The excerpt below shows another example of the intelligent agent obtaining information about at least one operational parameter of the network entity (e.g., to display on the web interface) and modifying the behavior of the network entity (e.g., by enabling/disabling an SNMP trap or configuring other SNMP settings).</p> <div> <p>Overview</p> <p>This document describes the SNMP management information bases (MIBs) that the controller supports. It also describes the overall design of the controller SNMP agent. <u>The Smart Zone SNMP agent allows its northbound portal application to monitor the system via SNMP GET operation.</u> It also notifies the critical events by sending traps. The Smart Zone supports V2c community and V3 user versions of SNMP. <u>It also supports configuring the system via SNMP SET from this release.</u> See Updating SNMP V2 and V3 Configuration Flow and SNMP Logs on page 24.</p> <p>NOTE</p> <p>For information on how to <u>enable SNMP traps and configure the SNMP V2 and V3 settings on the controller web interface,</u> refer to the <i>Administrator Guide for SmartZone 3.1.1</i>.</p> </div> <p>Source: SmartZone SNMP Reference Guide, p. 23.</p>

Claim 8

an intelligent agent that obtains information about at least one operational parameter of the network entity and/or modifies the behavior of the network entity, the intelligent agent interacting with the network entity in accordance with a predetermined data structure;

The intelligent agent interacts with the network entity in accordance with a predetermined data structure (e.g., a MIB data structure). For example, the object identifier shown in the table below is related to the predetermined data structure (e.g., MIB).

Standard MIB

Standard MIBs that the controller supports include:

- [Host Resource MIB](#) on page 26
- [UCD MIB](#) on page 27
- [SNMPv2 MIB \(RFC3418\)](#) on page 27
- [RFC1213 MIB \(RFC1213\)](#) on page 27

ruckusSZSystemMiscEventTrap

TABLE 4 ruckusSZSystemMiscEventTrap

Object Name	ruckusSZSystemMiscEventTrap
Object Identifier	.1.3.6.1.4.1.25053.2.11.1.1
Bindings	ruckusSZEventSeverity ruckusSZEventCode ruckusSZEventType ruckusSZEventDescription
Description	Generic trap triggered by administrator specified miscellaneous event. The event severity, event code, event type, event description are displayed.
Generated by Event Code	Refer to SmartZone Event Traps on page 257 - ruckusSZSystemMiscEventTrap on page 257

Source: SmartZone SNMP Reference Guide, p. 26, 49.

Claim 8

an intelligent agent that obtains information about at least one operational parameter of the network entity and/or modifies the behavior of the network entity, the intelligent agent interacting with the network entity in accordance with a predetermined data structure;

Below is further examples of the intelligent agent interacting with the network entity in accordance with a MIB data structure.

Introduction

The objects contained in the RUCKUS-SZ-EVENT-MIB group provide information about the controller supported traps.

NOTE

For details on alarms and events refer to *SmartZone Alarms and Events Guide*.

Ruckus Event Trap

The following table lists the MIB, OID, and description of each object in the RUCKUS-SZ group.

Trap Name	Object Identifier
ruckusSZSystemMiscEventTrap on page 49	.1.3.6.1.4.1.25053.2.11.1.1
ruckusSZUpgradeSuccessTrap on page 49	.1.3.6.1.4.1.25053.2.11.1.2
ruckusSZUpgradeFailedTrap on page 50	.1.3.6.1.4.1.25053.2.11.1.3
ruckusSZNodeRestartedTrap on page 50	.1.3.6.1.4.1.25053.2.11.1.4
ruckusSZNodeShutdownTrap on page 51	.1.3.6.1.4.1.25053.2.11.1.5
ruckusSZCPUUsageThresholdExceededTrap on page 51	.1.3.6.1.4.1.25053.2.11.1.6
ruckusSZMemoryUsageThresholdExceededTrap on page 52	.1.3.6.1.4.1.25053.2.11.1.7
ruckusSZDiskUsageThresholdExceededTrap on page 52	.1.3.6.1.4.1.25053.2.11.1.8
ruckusSZLicenseUsageThresholdExceededTrap on page 53	.1.3.6.1.4.1.25053.2.11.1.19
ruckusSZAPMiscEventTrap on page 53	.1.3.6.1.4.1.25053.2.11.1.20
ruckusSZAPConnectedTrap on page 54	.1.3.6.1.4.1.25053.2.11.1.21
ruckusSZAPDeletedTrap on page 54	.1.3.6.1.4.1.25053.2.11.1.22
ruckusSZAPDisconnectedTrap on page 55	.1.3.6.1.4.1.25053.2.11.1.23
ruckusSZAPLostHeartbeatTrap on page 55	.1.3.6.1.4.1.25053.2.11.1.24
ruckusSZAPRebootTrap on page 56	.1.3.6.1.4.1.25053.2.11.1.25
ruckusSZCriticalAPConnectedTrap on page 56	.1.3.6.1.4.1.25053.2.11.1.26
ruckusSZCriticalAPDisconnectedTrap on page 57	.1.3.6.1.4.1.25053.2.11.1.27
ruckusSZAPRejectedTrap on page 58	.1.3.6.1.4.1.25053.2.11.1.28
ruckusSZAPConfUpdateFailedTrap on page 58	.1.3.6.1.4.1.25053.2.11.1.29
ruckusSZAPConfUpdatedTrap on page 59	.1.3.6.1.4.1.25053.2.11.1.30
ruckusSZAPSwapOutModelDiffTrap on page 59	.1.3.6.1.4.1.25053.2.11.1.31
ruckusSZAPPreProvisionModelDiffTrap on page 60	.1.3.6.1.4.1.25053.2.11.1.32
ruckusSZAPFirmwareUpdateFailedTrap on page 61	.1.3.6.1.4.1.25053.2.11.1.34
ruckusSZAPFirmwareUpdatedTrap on page 61	.1.3.6.1.4.1.25053.2.11.1.35

Source: SmartZone SNMP Reference Guide, p. 45.

Claim 8	
<p>a data store storing data relating to a procedure for managing the at least one operational parameter of the network entity;</p>	<p>The Ruckus system utilizes a data store (e.g., memory) storing data relating to a procedure for managing the at least one operational parameter of the network (for example, data stored in the form of MIBs).</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <h2 style="text-align: center; color: #D9534F;">Ruckus System MIB</h2> <hr style="border: 1px solid #D9534F; margin: 5px 0;"/> <ul style="list-style-type: none"> • Introduction..... 141 • Ruckus System Command (SysCommands)..... 143 • Ruckus Controller System Node Table..... 144 • Ruckus Controller Zone Table..... 148 <h2 style="color: #D9534F;">Introduction</h2> <p>The objects contained in the RUCKUS-SZ-SYSTEM-MIB <u>provide information about the controller system, including its WLAN traffic, managed APs, wireless clients associated with the managed APs, and CPU and memory utilization.</u> The following are the MIB definition system level statistics nodes for RUCKUS-SZ-SYSTEM-MIB.</p> </div> <p>Source: SmartZone SNMP Reference Guide, p. 141.</p>

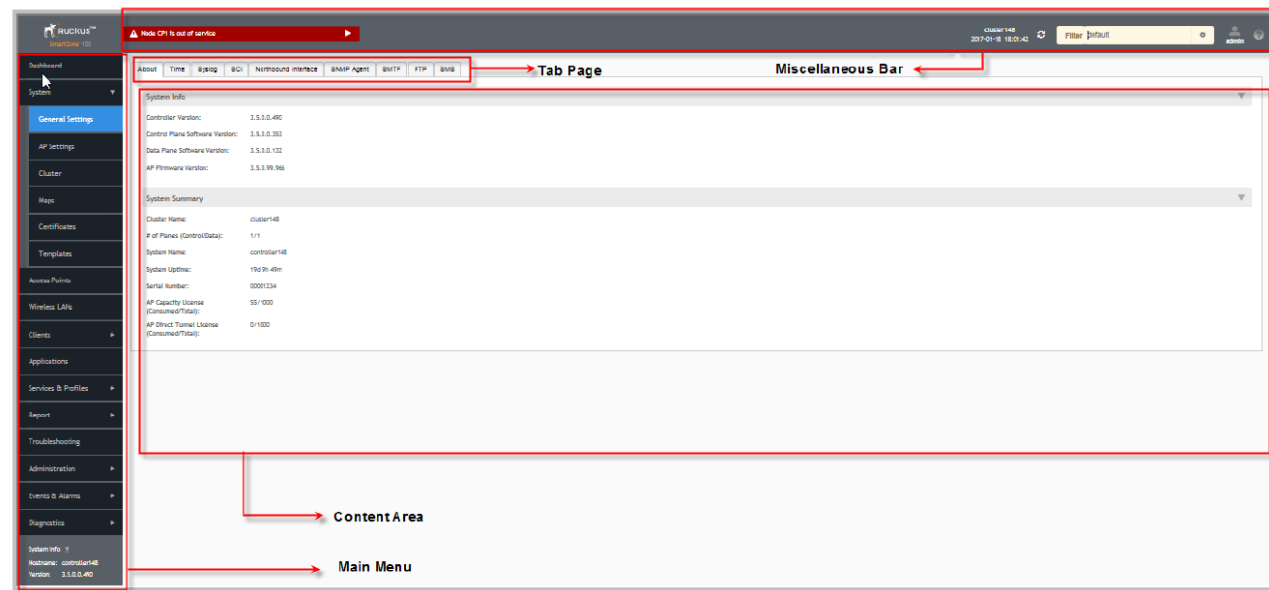
Claim 8	
<p>a Web server that provides an interactive environment to manage the at least one operational parameter of the network entity, and</p>	<p>The Ruckus system utilizes a web server (e.g. a server hosting the software used for the web interface) that provides an interactive environment (e.g. the web interface presented to a user through a web browser) to manage the at least one operational parameter of the network entity (e.g., enabling/disabling an SNMP trap or configuring other SNMP-related settings). For example, the excerpt below shows that the Ruckus SmartZone controllers include a web server.</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <h3 style="color: #D95319; margin: 0;">Logging On to the Web Interface</h3> <p>Before you can log on to the controller web interface, you must have the IP address that you assigned to the Management (Web) interface when you set up the controller on the network using the Setup Wizard.</p> <p>Once you have this IP address, you can access the web interface on any computer that can reach the Management (Web) interface on the IP network.</p> <p>Follow these steps to log on to the controller web interface.</p> <ol style="list-style-type: none"> 1. On a computer that is on the same subnet as the Management (Web) interface, start a web browser. <p>Supported web browsers include:</p> <ul style="list-style-type: none"> • Google Chrome 47 and later (recommended) • Safari 7 and later (Mac OS) • Mozilla Firefox 44 and later </div> <p>Source: SmartZone Administrator Guide at p. 15</p>

Claim 8

a Web server that provides an interactive environment to manage the at least one operational parameter of the network entity, and

As an example, the Web server provides the interactive environment shown below to manage the at least one operational parameter of the network entity.

FIGURE 1 Controller Web Interface Features



Source: SmartZone Administrator Guide at p. 17

Claim 8	
<p>a Web server that provides an interactive environment to manage the at least one operational parameter of the network entity, and</p>	<p>The Web-server, via the web interface, provides an interactive environment (e.g., input boxes, check boxes, buttons, drop-down menus, etc.) to manage at least one operational parameter (e.g., SNMP-related settings, such as enabling SNMP traps, configuring SNMP settings, and enabling SNMP notifications, as shown in the excerpts below) of the network entity.</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p>Overview</p> <p>This document describes the SNMP management information bases (MIBs) that the controller supports. It also describes the overall design of the controller SNMP agent. The Smart Zone SNMP agent allows its northbound portal application to monitor the system via SNMP GET operation. It also notifies the critical events by sending traps. The Smart Zone supports V2c community and V3 user versions of SNMP. It also supports configuring the system via SNMP SET from this release. See Updating SNMP V2 and V3 Configuration Flow and SNMP Logs on page 24.</p> <p>NOTE</p> <p>For information on how to <u>enable SNMP traps and configure the SNMP V2 and V3 settings on the controller web interface</u>, refer to the <i>Administrator Guide for SmartZone 3.1.1</i>.</p> </div> <p>Source: SmartZone SNMP Reference Guide, p. 23.</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p>Configuring SNMP v2 Agent</p> <p>To configure SNMP v2 Agent settings:</p> <ol style="list-style-type: none"> 1. Go to System > General Settings > SNMP Agent. 2. Select the Enable SNMP Notifications Globally <u>check box</u> to send out notification messages. 3. To configure the SNMPv2 Agent, click Create and update the details as explained in the following table. </div> <p>Source: SmartZone Administrator Guide at p. 42</p>

Claim 8	
<p>an interface that communicates values of the at least one operational parameter between the Web server and the intelligent agent in accordance with the predetermined data structure,</p>	<p>The Ruckus systems utilize an interface that communicates values of the at least one operation parameter between the Web server (e.g., the server hosting the web interface) and the intelligent agent (e.g., the SNMP agent) with a predetermined data structure (e.g. data structures utilized in an SNMP management system such as MIBs).</p> <div> <p>Enabling Global SNMP Notifications</p> <p>The controller supports the Simple Network Management Protocol (SNMP v2 and v3), which allows you to query controller information, such as system status, AP list, etc., and to set a number of system settings using a Network Management System (NMS) or SNMP MIB browser.</p> <p>You can also enable SNMP traps to receive immediate notifications for possible AP and system issues.</p> <p>The procedure for enabling the internal SNMP agents depends on whether your network is using SNMPv2 or SNMPv3. SNMPv3 mainly provides security enhancements over the earlier version, and therefore requires you to enter authorization passwords and encryption settings, instead of simple clear text community strings.</p> <p>Both SNMPv2 and SNMPv3 can be enabled at the same time. The SNMPv3 framework provides backward compatibility for SNMPv1 and SNMPv2c management applications so that existing management applications can still be used to manage the controller with SNMPv3 enabled.</p> </div> <div> <p>Web Interface Features</p> <p>The web interface is the primary graphical front end for the controller and is the primary interface</p> <p>You can use it to:</p> <ul style="list-style-type: none"> • Manage access points and WLANs • Create and manage users and roles • Monitor wireless clients, managed devices, and rogue access points • View alarms, events, and administrator activity • Generate reports • Perform administrative tasks, including backing up and restoring system configuration, upgrading the cluster, downloading support , performing system diagnostic tests, viewing the status of controller processes, and uploading additional licenses (among others) </div> <p>Source: SmartZone Administrator Guide at p. 42</p>

Claim 8	
<p>an interface that communicates values of the at least one operational parameter between the Web server and the intelligent agent in accordance with the predetermined data structure,</p>	<p>The Ruckus systems utilize an interface (e.g. an interface coupling the web server to the intelligent agent) that communicates values of the at least one operation parameter between the Web server (e.g., the server hosting the web interface) and the intelligent agent (e.g., the SNMP agent) with a predetermined data structure (e.g. data structures utilized in an SNMP management system such as MIBs).</p> <div><h3>Overview</h3><p>This document describes the SNMP management information bases (MIBs) that the controller supports. It also describes the overall design of the controller SNMP agent. <u>The Smart Zone SNMP agent allows its northbound portal application to monitor the system via SNMP GET operation.</u> It also notifies the critical events by sending traps. The Smart Zone supports V2c community and V3 user versions of SNMP. <u>It also supports configuring the system via SNMP SET from this release.</u> See <u>Updating SNMP V2 and V3 Configuration Flow and SNMP Logs</u> on page 24.</p><p>NOTE</p><p>For information on how to <u>enable SNMP traps and configure the SNMP V2 and V3 settings on the controller web interface,</u> refer to the <i>Administrator Guide for SmartZone 3.1.1.</i></p></div> <p>Source: SmartZone SNMP Reference Guide, p. 23.</p>

Claim 8	
<p>an interface that communicates values of the at least one operational parameter between the Web server and the intelligent agent in accordance with the predetermined data structure,</p>	<p>The Ruckus systems utilize an interface (e.g. an interface coupling the web server to the intelligent agent) that communicates values of the at least one operation parameter (e.g., value related to SNMP MIBs such as email alarm and email address settings) between the Web server (e.g., the server hosting the web interface) and the intelligent agent (e.g., the SNMP agent) with a predetermined data structure (e.g. data structures utilized in an SNMP management system such as MIBs).</p> <div style="border: 1px solid black; padding: 10px;"> <h3 style="color: #e67e22;">Sending SNMP Traps and Email Notifications for Events</h3> <p>By default, the controller saves a record of all events that occur to its database. You can configure the controller to also send SNMP traps and email notifications for specific events whenever they occur.</p> <p>Verify that global SNMP traps are enabled to ensure that the controller can send SNMP traps for alarms.</p> <p>You can also manage notifications of the event for each zone by clicking the zones displayed in the tree structure. Event configuration for each zone is independent including:</p> <ul style="list-style-type: none"> Enabling or disabling E-mail notification settings Recipient E-mail address Enabling or disabling DB persistence settings Enabling or disabling SNMP trap settings <p>You can also manually trigger SNMP traps without generating events using CLI. You can use the <code>#trigger-trap <event code></code> command to trigger traps for respective events with their default attributes.</p> <p>You can acquire the status of a specific client MAC address by using the query RUCKUS-CTRL-MIB. For more information, see the <i>SmartZone SNMP MIB Reference Guide</i>.</p> <ol style="list-style-type: none"> Go to Events and Alarms > Events. Click the Event Management tab. <p>The Event Management page appears displaying the following information:</p> <ul style="list-style-type: none"> Email Notification: Select the Enable check box, and then type an email address or email addresses in the Mail To box. If you want to send notifications to multiple recipients, use a comma to separate the email addresses. Then, click OK. Events: View the table and select the events for which you want to send traps or email notifications (or both). Select the Enable or Disable options from the drop-down menu, and configure the following: <ul style="list-style-type: none"> - Enable SNMP Notification: Click this link to enable SNMP trap notifications for all selected events. - Enable Email: Click this link to enable email notifications for all selected events. - Enable DB Persistence: Click this link to enable saving of all selected events to the controller database. If an event is already currently enabled, it will stay enabled after you click this link. <p>Following information related to the event are displayed:</p> <ul style="list-style-type: none"> Code: displays the event code. Severity: displays the severity of the event such as Information, Minor and so on. Category: displays the category under which the event falls under, such as AP communication. Type: displays the event type such as AP managed, Ap rejected and so on. Zone Override: display the override status of the zone. </div> <p>Source: SmartZone Administrator Guide, pp. 357-58.</p>

Claim 8

an interface that communicates values of the at least one operational parameter between the Web server and the intelligent agent in accordance with the predetermined data structure,

The Ruckus systems utilize a predetermined data structure (e.g., MIB structure) for communicating values of at least one operational parameter between the Web server and the intelligent agent.

ruckusCTRLSysCmdReboot

TABLE 244 ruckusCTRLSysCmdReboot

Object Name	ruckusCTRLSysCmdReboot
Parent Node	ruckusSZSystemStats
Object Identifier	.1.3.6.1.4.1.25053.1.4.1.1.15.13
Description	<p>This object defines the system command for SZ node. Command to reboot SZ is:</p> <ul style="list-style-type: none"> • 0- Normal (default value), which means that the system has completed the reboot command or the system has been rebooted. • 1 - Run-reboot - once the value is set as run-reboot, user cannot stop it until the system is setup again. Users can only set OID as this value. <p>NOTE This command may fail to reboot the system due to the cluster operation.</p> <p>If it set as reboot successfully, SNMP daemon will be stopped immediately. Therefore, it should wait until the system is up again. For example:</p> <pre>snmpset -v2c -c private -m1 172.17.50.100 RUCKUS-CTRL-MIB::ruckusCTRLSysCmdReboot.0 i run-reboot</pre>

Source: SmartZone SNMP Reference Guide, p. 144.

Claim 8

an interface that communicates values of the at least one operational parameter between the Web server and the intelligent agent in accordance with the predetermined data structure,

Below is a further example of the intelligent agent interacting with the network entity in accordance with a MIB data structure.

ruckusSZSystemMiscEventTrap

TABLE 4 ruckusSZSystemMiscEventTrap

Object Name	ruckusSZSystemMiscEventTrap
Object Identifier	.1.3.6.1.4.1.25053.2.11.1.1
Bindings	ruckusSZEventSeverity ruckusSZEventCode ruckusSZEventType ruckusSZEventDescription
Description	Generic trap triggered by administrator specified miscellaneous event. The event severity, event code, event type, event description are displayed.
Generated by Event Code	Refer to SmartZone Event Traps on page 257 - ruckusSZSystemMiscEventTrap on page 257

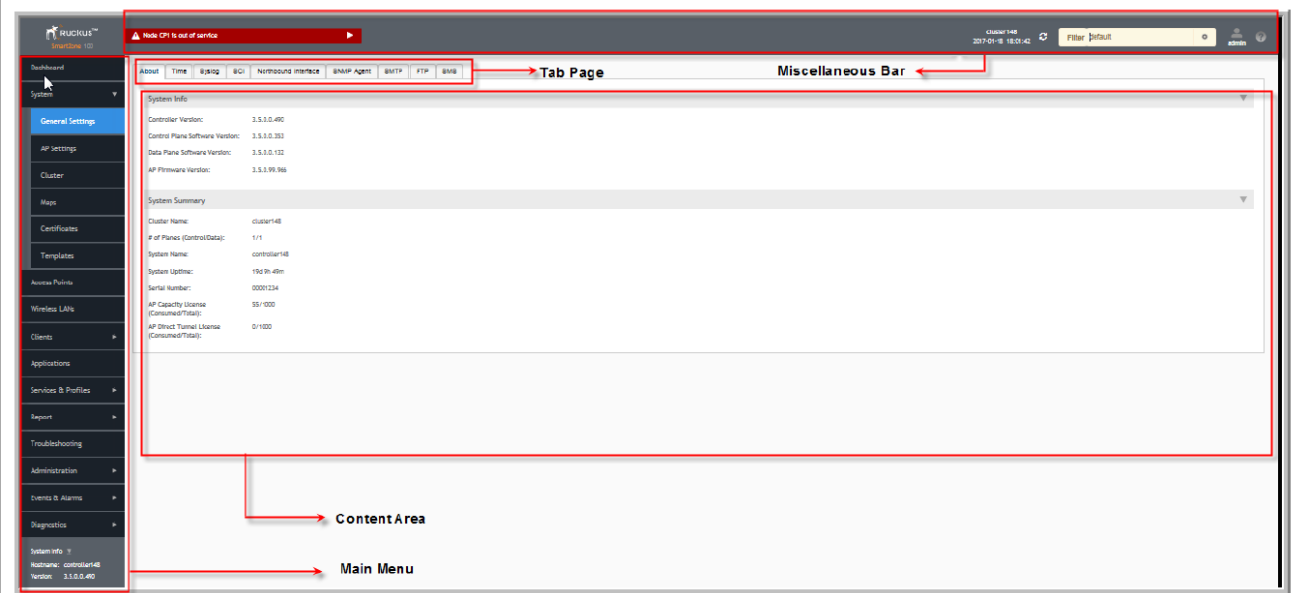
Source: SmartZone SNMP Reference Guide, p. 49.

Claim 8

wherein the Web server provides the interactive environment using the Web pages generated by a Web page generator, the Web page generator generating a set of linked Web pages in response to a request to carry out a procedure, wherein each Web page of the set of linked Web pages being based upon the data stored in the data store and corresponding to at least one step in the procedure to manage the at least one operational parameter of the network entity, and

The Ruckus systems utilize a web server (e.g. the server that host the web interface) which provides the interactive environment using web pages (e.g. the user interface is presented via a web browser using web pages) generated by a web page generator.

FIGURE 1 Controller Web Interface Features



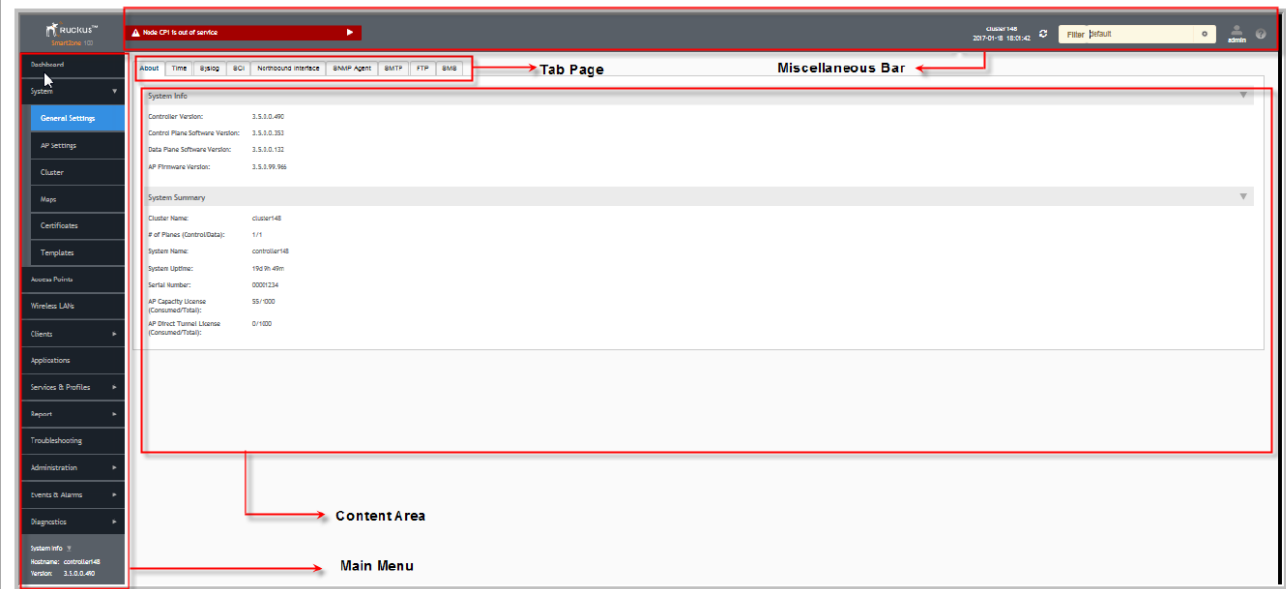
Source: SmartZone Administrator Guide at p. 17

Claim 8

wherein the Web server provides the interactive environment using the Web pages generated by a Web page generator, the Web page generator generating a set of linked Web pages in response to a request to carry out a procedure, wherein each Web page of the set of linked Web pages being based upon the data stored in the data store and corresponding to at least one step in the procedure to manage the at least one operational parameter of the network entity, and

The web page generator generates a set of linked webpages (e.g. the web pages to be sent to a user's browser) in response to a request to carry out a procedure (e.g. a user's request to obtain data or manage/configure a device). Each web page of the set of linked web pages is based upon data stored in the data store (e.g. menu's and configuration data displayed in the interface for a particular device will be based on device data stored in a data store such as an MIB) and corresponds to at least one step in the procedure to manage the at least one operation parameter of the network entity (e.g. the webpage is tied to management or configuration functions).

FIGURE 1 Controller Web Interface Features



Source: SmartZone Administrator Guide at p. 17

Claim 8

wherein the interface uses the stored data relating to the procedure for managing the at least one operational parameter of the network entity to generate a determination result indicating whether values to be communicated to the intelligent agent from the Web server conform to a rule relating to the procedure for managing the at least one operational parameter of the network entity, and

The interface uses the stored data (e.g. data in a MIB) relating to the procedure for managing the at least one operation parameter of the network entity (e.g. configuring or initiating an SNMP based command) to generate a determination result indicating whether values to be communicated to the intelligent agent conform to a rule. For example, when the information does not conform to a rule, the web interface may display an error message or generate an error routine.

Configuring SNMP v3 Agent

- Go to **System > General Settings > SNMP Agent**.
- Select the **Enable SNMP Notifications Globally** check box to send out notification messages.
- To configure the SNMPv3 Agent, click **Create** and update the details as explained in the following table.

TABLE 6 SNMPv3 Agent Settings

Field	Description	Your Action
Community	Indicates that applications which send SNMP Get Requests to the controller (to retrieve information) will need to send this string along with the request before they will be allowed access.	Enter a name.
Authentication	Indicates the authentication method.	<p>Choose the required option:</p> <ul style="list-style-type: none"> None—Use no authentication. SHA—Secure Hash Algorithm, message hash function with 160-bit output. <ol style="list-style-type: none"> Enter the Auth Pass Phrase. Choose the Privacy option. <ul style="list-style-type: none"> None: Use no privacy method. DES: Data Encryption Standard, data block cipher. AES: Advanced Encryption Standard, data block cipher. Enter a Privacy Phrase, 8 through 32 characters. MD5—Message Digest algorithm 5, message hash function with 128-bit output. <ol style="list-style-type: none"> Enter the Auth Pass Phrase. Choose the Privacy option. <ul style="list-style-type: none"> None: Use no privacy method. DES: Data Encryption Standard, data block cipher. AES: Advanced Encryption Standard, data block cipher. Enter a Privacy Phrase, 8 through 32 characters.

Source: SmartZone Administrator Guide at p. 43

Claim 8	
<p>wherein the interface communicates values from the Web server to the intelligent agent in response to the determination result indicating conformance.</p>	<p>The interface communicates values (e.g., values associated with enabling/disabling an SNMP trap or configuring other SNMP-related settings) from the Web server to the intelligent agent (e.g., the SNMP agent) in response to the determination result indicating conformance (e.g. after confirming that any user input conforms to any rules, the data inputted will be communicated to an SNMP agent on the device for further processing). If the information has been entered correctly (i.e. “in conformance”), an error message may not appear or an “OK” button may be available, allowing communication of the values.</p> <div style="border: 1px solid black; padding: 10px; margin: 20px auto; width: fit-content;"> <p>NOTE You can also edit or delete an SNMPv3 agent. To do so, select the SNMPv3 agent from the list and click Configure or Delete respectively.</p> <p>4. Click OK.</p> </div> <p>Source: SmartZone Administrator Guide at p. 44</p>